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Editorials

THE AMERICAN MEDICAL ASSOCIATION MEETING AT PHILADELPHIA

The eighty-second annual meeting of the American Medical Association, held in Philadelphia, June 8-12, was one of the largest and most successful in its history. Approximately seven thousand fellows were in attendance. The medical profession of Illinois was represented by 223 fellows, the largest of any state excepting the states bordering on Pennsylvania.

The secretary's report shows a membership in the American Medical Association slightly in access of 100,000, the largest in the history of the association; of this number over 65,000 were on the fellowship roster. Illinois is credited with 7,371 members and 5,432 fellows for the year 1931.

Illinois was represented by its full quota of ten delegates.

The meeting of the association consisted of four features:

1. The House of Delegates.
2. The Scientific Sessions.
3. The Scientific Exhibits.
4. The Technical Exhibits.

The House of Delegates met in regular session each day and discussed problems of administration, among them the very important subjects of state medicine, medical treatment of veterans of the world war and prohibition.

The report of the Board of Trustees covered sixty-one pages in the Handbook. Among other things it called particular attention to the marked increase in the work of the Association which now requires the services of more than 500 full-time employees in the headquarters building in Chicago. The gross earnings of the Journal were $1,773,220.18, while the Journal operating expenses were $993,174.24, leaving net earnings from the Journal of $780,045.73. The miscellaneous income was $48,010.80 and Association income $47,097.07, making a total gross income of $875,153.80. All expenses amounted

to 465,428.16, leaving a net income for the year 1930 of $409,725.64. Many additions and improvements have been made in the Association's physical equipment. A new rotary press with a capacity of 96 pages was purchased at a cost exceeding $70,000 and is now in operation. The sum of $750,000 has been set aside as the nucleus of a building fund to which will be added more from time to time in order to erect a building sufficiently large to care for all of the activities of Association. The net worth of the Association, Dec. 31, 1930, was $2,802,369.63.

The House of Delegates appears to have literally taken the "bull by the horns" and it is believed that the medical profession is today more determined than ever that it shall take care of the business of their own profession and not let it be done by outside parties. The policy of the federal government of rendering medical and hospital benefits to veterans of the World War with non-service connected disabilities was bitterly attacked by the House of Delegates and strong representations were made to the Congress and the American Legion to abandon the policy and substitute therefor a plan of disability insurance benefits.

A resolution of far-reaching importance and bearing upon the economic situation of the profession and the fundamental principle of government was introduced and adopted by the House of Delegates as follows:

RESOLUTION ON THE POLICY OF RENDERING MEDICAL AND HOSPITAL BENEFITS TO VETERANS WITH NON-SERVICE CONNECTED DISABILITIES

Dr. H. H. Shoulders, Tennessee, presented the following resolutions:

WHEREAS, The federal government has inaugurated the policy of rendering medical and hospital benefits to veterans of the World War with non-service connected disabilities; and

WHEREAS, This policy was inaugurated over the opposition of the American Medical Association; and

WHEREAS, The policy now in force, if carried to its logical conclusion, involves the construction, the staffing, and the maintenance of a sufficient number of hospitals to accommodate the hospital needs of all the veterans of the World War; and

WHEREAS, Such a policy places the federal government in unnecessary and unjust competition with the civilian hospitals and the medical profession of the United States; and

WHEREAS, The present policy is of unequal benefit to veterans by reason of the fact that many disabled veterans cannot (for one reason or another) avail themselves of the benefit; therefore be it

Resolved, That the House of Delegates of the American Medical Association petition the Congress of the United States and the American Legion to abandon the policy of rendering hospital and medical benefits to veterans of the World War with non-service connected disability, and substitute therefor a plan of disability insurance benefits with the following provisions:

First, the creation of a Bureau of Disability insurance in the Veterans' Bureau as now constituted.

Second, the issuance of a disability insurance policy to each veteran with a disability benefit clause, as follows:

(*a*) The payment of a weekly cash benefit during a period of total disability, and

(*b*) The payment of liberal hospital benefit sufficient to cover the hospital expenses of a veteran during a period of hospitalization for any disability. Such benefits to be paid to a veteran on satisfactory proof of total disability, and

(*c*) Such other provisions as are necessary for the proper administration of the act.

Be it further

Resolved, That the proper officers of this association be instructed to approach the officers of the American Legion with the view to securing the adoption of the policy above set out as a part of the legislative program of the American Legion, and be it further

Resolved, That each state medical association be requested to form a committee whose duty it will be to approach the state and local Legion posts throughout the country with a view to securing the adoption of this program by them.

A distinguished feature of this session was the elaborate use of the radio for coincident education of the public. For each day the Philadelphia County Medical Society arranged a series of public lectures, which were broadcast on the radio; also innumerable radio talks, and a full hour of radio education on the National Broadcasting chain. The scientific assembly of the association consisted of fifteen sections at which about three hundred papers were read and discussed.

The Scientific Exhibit was the subject of numerous encomiums. It included a half mile of aisles and so many exhibits that a visitor who cared to spend fifteen minutes in each might well have utilized the entire week in this display alone. Elsewhere is a report of the Committee on Awards. This department of the work is now recognized as one of the most valuable features of the annual session; it has been carried to a high point and represents a model for similar exhibits on a smaller scale throughout the world.

The clinical lecture program which takes

place on the first two days of the Annual Session was attended regularly by a changing audience of one thousand listeners. Here eminent clinicians discussed problems of recent interest in scientific medicine and concerned themselves particularly with the clinical application of such knowledge. Thus special emphasis was laid in the Philadelphia Session on the treatment of disorders affecting the blood, on fungus infection of the skin, on syphilis, on deficiency diseases, on arthritis, on infantile paralysis and on diabetes. These clinical lectures constituted a veritable postgraduate course in practical medicine. Their increasing popularity testifies to the fact that they meet a definite need. The American Medical Association in its Annual Session is endeavoring to provide Fellows of the Association with clinical education as good as or better than that available in any other group or in any other way.

The great Technical Exhibit was beautifully elaborated with memorial arches named for heroes of medicine. Exhibitors had plenty of light and space, and left Philadelphia more than satisfied. Indeed, one exhibitor reported that the assistants in his booth had interviewed 3,600 persons during the annual session. An average detail man sees from eight to ten physicians each day; hence the work in this exhibit represented 360 days of work for one detail man, or 70 of work for the five men who were in the booth.

President E. Starr Judd, in his president's address before the association, discussed emphatically some of the outstanding problems of the profession. A few excerpts from his talk are very timely, we quote:

> The profession of medicine is under obligation to protect the public from unsound programs as much as to see that it is informed on the proper principles. A committee on public relations composed of members who have made studies of these problems, and who appreciate the obligations of the profession to the public, is a valuable part of a state organization.
>
> The organization of all medical activities in each state, so that the public health association, state medical association, and all other associations and auxiliaries are under the one head helps greatly to coordinate all medical activities. This scheme brings the medical profession as a whole into the leadership of all activities pertaining to medicine within the state. It is not only the privilege of the profession to assume this leadership, but it is also its solemn obligation to direct all medical activities.
>
> Society must be made to realize that organized medicine is perfectly able to control and operate its affairs without the help of the government or other outside organizations and that it can do so to the advantage of every one concerned.

INDIVIDUAL RELATIONSHIPS

The individual relationship of the physician and the patient is now and always will be the crux of medical practice. The fact that several plans for public relations have been worked out and put into operation shows that the profession is aware of the social and industrial changes that are taking place, and that it is making the necessary changes and fulfilling its obligations. With all of this development, however, unless the intimate personal relationship between physician and patient is maintained it will not be possible to obtain for the patient the kind of service that the majority of American citizens are entitled to and will demand. No plan yet suggested seems to fit all communities, for the problems vary in different places. One thing I am certain of, however, is that whether caring for the sick is done by private practice, group practice, clinics or guilds, it must be continued on a personal basis.

Routine procedures, with established compensation and reward, would not only destroy all enthusiasm for the development of the art of the practice of medicine but would also take away all stimulation and initiative for investigation and research.

MEDICAL EDUCATION

The American Medical Association was organized largely for the purpose of advancing premedical and medical education. At the time of its organization the requirements of medical training were insignificant and those who operated the medical schools derived financial returns according to the number of students in the school. In some instances, therefore, everything possible was done to make it easy for the students to enter and pass through the school. On the other hand, practitioners did not want any more competition than they were obliged to have, so they opposed the easy plan for admission to the schools and the easier way of completing the courses. Medical education became entirely different after the formation of the American Medical Association, and particularly after the Council on Medical Education and Hospitals was established. This body has brought both premedical and medical education to a standard by which they are recognized throughout the world. Like many other good ideas, when they once get a start it is difficult to control them, and the question now arises as to whether the requirements are not too rigid, and the time required for completion of a medical course is not too long. All are agreed that it is not possible to have too much training for this work, but some feel that the medical school courses are too long and too elaborate. One point is certain, and that is that most of those who spend many years in preparation for the practice of medicine will not be content to go into general practice and from there work up in the profession. They have been taught the practice of medicine with all the

most modern devices and equipment and are lost without them. Not all of these requirements are essential, and many students will become better physicians if they are obliged to carry out examination and practice according to their natural senses.

The trend of medical education is toward scientific medicine and specialization, and not so much time is given to the art of the practice. The achievements of scientific medicine within the last few years are not realized by many. Certain diseases have been brought under complete control, and some will probably be eradicated in a short time. Through the efforts of science, knowledge is being accumulated concerning the cause and the course of disease, and this makes better treatment possible. Better treatment will come as our knowledge of the fundamental is increased, so that no one with a sound conscience can belittle the time and effort that is put into the study of scientific medicine. Not all medical students are scientists, and few real scientists are good practitioners of medicine; so the best results are obtained by a close association between the two. A practitioner of the art of medicine should not do things in a purely routine manner but should be on the lookout for better methods. If he studies his cases individually and in groups, his research in this way may add valuable information to our knowledge. Not only that, but studies of this kind take away the drudgery of routine practice and add stimulation and pleasure to work. On the other hand, in order that the most may be derived from scientific studies, every one who devotes his time to this work should welcome the opportunity to pass this information on directly for the benefit of other patients. In order to do this, he must carry on a practice himself or must be closely associated with some one who does.

Too often research and experimental work are carried on exclusively in laboratories or in isolated places. The best type of research may often be done by thoughtful, studious physicians in their everyday work.

SPECIALIZATION

Specialization implies special and expert knowledge in a certain field of medicine. It is at once evident that no one person can have sufficient knowledge of all disease conditions to be able to carry out treatment satisfactorily, so it is advisable to specialize in our work to some extent. The idea of specializing in many small fields has been greatly abused, but this has been due largely to the demand for specialists made by the public. Just because one says he is a specialist does not mean that he has special knowledge in his field, and for this reason several of the scientific sections of the American Medical Association, together with special societies, have worked out plans whereby one who wants to practice a specialty can take an examination after he has had special training. If he is successful in the examination he will be granted a certificate which will show that he is qualified to be classified as a specialist in this field. This plan is an attempt to protect the people against so-called specialists who have not had special training. There should be some way for the patient and the public to know who are especially qualified and who are not. Publicity given to this plan should be helpful.

Specialization in certain fields of medicine and surgery is essential in order to obtain the best results. This has been greatly overdone and has been the cause of much criticism. A physician is not qualified to take up special work until he has spent some time in general practice. Specialization does give an opportunity to concentrate on one particular line of work, and industry and experience bring special knowledge and skill in this work.

It has been said that this plan of specialization has greatly increased the cost of medical attention. If this is so, although it is doubtful that it is so, the result may be attributed directly to the demands of the public. These demands would not be made if the public could be kept well informed on these matters.

That the practice of medicine is changing is evident to everyone. Specialists dominate practice in certain localities, and the public is becoming convinced that the hospital supplies the most adequate plan for the treatment of human ills.

We are living in a transition period, and new methods of medical service are being created. Some plan must be devised whereby the family physician will remain the foundation of medical service, for his knowledge of the patient and his surroundings and his experience in such intimate and personal contact with patients makes him better qualified not only to diagnose and treat but also to direct the management of the case. His obligation is a serious one. No position in our social make-up requires a person of character and industry and deep appreciation of his moral responsibility more than does that of the general practitioner of medicine. With these attributes he has been a great success and will continue to be for a long time to come.

The changing character of medical practice has broadened the scope of the usefulness of medical practitioners, who at once become leaders in their communities in all public health work.

The White House Conference called by President Hoover during the last year will have a far-reaching influence and, as time passes, is certain to have a profound effect on the physical characteristics of the people of this country. It is not unlikely that this movement in the interest of child welfare may help to solve the problem of the cause and character of many chronic illnesses which the profession up to this time has not been able to understand.

PHILOSOPHY IN MEDICINE

The first field of philosophy is logic and is defined as the study of ideal methods in thought and in research. Logic tries to understand observations, a faculty that the old-time physician employed to such advantage, and one that must be taught more thoroughly. The visiting physician from the country passing through a medical ward makes a correct diagnosis from the appearance of the patient alone. The patient may have been submitted to all known tests and may have been studied by many scientists, but the country physician with much experience and with powers of observation and deduc-

tion which made him a philosopher of medicine arrives at the correct diagnosis, which may have baffled the scientists. If this is philosophy, then we need more of it in our studies and practices.

The second field is esthetics, or the philosophy of the beautiful both in art and in nature. Almost every physician has a rather keen esthetic sense. He appreciates the symmetry of health, and in his care of the sick he strives to restore his patients to a physical state that will not offend the esthetic sensibilities of observers. However, the physician uses the term "art" in its old sense, which may have nothing to do with esthetics. He calls his "craft" an art, and this aspect of medicine is worthy of a moment's digression. Until science began to make such strides, all phases of the practice of medicine and surgery were based on art, in the sense indicated. Art, or craftsmanship, is and always will be a most important part of medicine. A patient may be examined, medical treatment may be carried out, or a surgical operation may be performed in craftsman-like manner; or any of these things may, on the other hand, be done without regard for form or craftsmanship. The result of the examination, treatment or operation will usually depend on whether it has been done according to the principles of the craft. The art of caring for a sick person is learned by the student during his service in the hospital, but I fear that too little stress is placed on this form of instruction. A sick person does not want to be cared for by machine methods, because he feels, and rightly so, that he will not be as well taken care of as though he were having personal attention from his own physician. The practice of medicine, under any scheme, must give due consideration to the art of medicine.

Ethics is a part of philosophy and is defined as a study of ideal conduct. In no part of our social structure is it so necessary to understand and observe the strictest idea of what is right and what is wrong as in medicine. A more careful estimate of one's character should be made before one is permitted to undertake the study of medicine. There is no such opportunity, in any other field than medicine, for taking advantage of another as there is in everyday practice. The pernicious custom of division of fees depends largely on lack of character and moral principles. This will be corrected only by more careful estimate of the character and morals of those applying for entrance to medical schools. Many students leave college with the idea that feesplitting prevails throughout the country, and such is not the case. A course in medical ethics would not be out of place in the medical school.

Politics is another division of philosophy; is a study of ideal social organization. In this subdivision are placed our studies in the relationship that we have with all other political and social organizations. It is the obligation of the profession to continue studies to help to establish ourselves in our proper place in relation to the local, state and national government. We must all realize that an organization that is responsible for the health lives of so many individuals each year and that is economically responsible for the expenditure of so much time, energy and money has a large responsibility and obligation. Much of the faulty legislation pertaining to medicine has been enacted because the legislators were not properly informed and because much pressure was brought to bear on them by irregular practitioners. Medical philosophers must continue to study the ideal social organization and to effect a plan whereby our relationship to society and politics will be most helpful.

The following officers were elected:

President-elect, E. H. Cary, Dallas, Texas.

Vice-President, George C. Yeager, Philadelphia.

Secretary, Olin West, Chicago.

Speaker of the House of Delegates, Fred C. Warnshuis, Grand Rapids, Mich.

ANNUAL MEETING OF INTER-STATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The International Assembly of the Inter-State Postgraduate Medical Association of North America will be held at Milwaukee Auditorium, Milwaukee, Wis., October 19-23, 1931.

Detailed information relative to the meeting can be procured by writing Dr. Edwin Henes, Jr., executive secretary, 759 North Milwaukee St., Milwaukee, Wis. See advertisement on page 19 this issue.

DR. C. W. HOPKINS HONORED

At the eleventh annual meeting held in New York City June 9, 1931, Dr. C. W. Hopkins, Chief Surgeon of the Chicago & Northwestern Railroad, was elected chairman of the medical and surgical section of the American Railway Association. Dr. Hopkins' election to the high honor must have come as a great surprise to him for the reason that the doctor was not present at the meeting, being confined to his home on account of ill health.

POINTING THE FINGER OF MOCKERY AND CRITICISM AT THE MEDICAL PROFESSION

A most specious plea for adoption of compulsory health insurance in America appears in the May 30, 1931, issue of *The Pathfinder*, published in Washington, D. C. The entire article is a serious indictment of the medical profession. It is crammed with misrepresentations and distortions of fact and premises contrary to fact. Statements made arbitrarily therein should be

dismissed as ridiculous if it were not for the erroneous impression that will be stamped in the minds of the misinformed or the partially informed to whom the magazine may be sent in the line of socialistic propaganda.

With the greatest unction in the world this article appears to champion the rights of the downtrodden sick of the country by pointing the finger of mockery and criticism at the medical profession and by making against this most underpaid body of humanitarians accusations that are actually sickening.

In a box head at the bottom of the front page of the journal appears the statement,

"A doctor is a man who makes his living directing patients to a specialist. . . . A specialist is a doctor who knows more and more about less and less. . . . A specialist is a man who can't tell what is wrong with you if you haven't any teeth."

"High Costs and High-Handed Methods are charged; Solution in Medical Service Under Way."

Excuse can't be made for these statements on the ground that they are meant to be humorous. For the article which they embellish is a deadly serious affair.

What a pity that the author did not investigate the results of public health insurance in some of those "sixteen foreign countries in which compulsory health insurance now obtains?"

What a pity that some kindly friend did not call to the attention of the author that this very system of "subsidized state health insurance" that he advocated is guilty of the same fickleness that he is now attributing to the medical profession itself as he states, "The Robin Hood system of robbing the rich and giving to the poor—but Robin was not allowed to continue the system. It leaves too much to the whim of the robber."

The statement is not quite clear even in the light of the preceding paragraph that reads, "Let us see what the doctors are accused of in the great chorus of complaint. First may be mentioned their unreasonable and unregulated charges. A grocer could not very well sell a head of cabbage to one man for ten cents and to another for ten dollars.

"THE DOCTOR IS ABOUT THE ONLY MAN LEFT WHO CAN CHARGE ACCORDING TO HIS VICTIM'S ABILITY TO PAY. In New York recently a doctor charged the head of a steel manufacturing company $150,000 for services extending over nine months—and took the matter to court when the patient showed impatience. The doctors justify this peculiar privilege of theirs on the ground that they treat many without charge—they claim to give $365,000,000 in free services every year."

Further along in the article that pretends pompously to have probed the length, depth and breadth of the matter of medical economics, the author comments favorably on the fact that, "Many big industrial concerns, schools and other organizations have practical health services. ". . . . The Endicott-Johnson Shoe Corporation furnishes medical care to the 60,000 persons supported by their factory at a yearly cost of $52.60 a family. For this they carry 28 doctors, nine dentists, 77 nurses, four pharmacists, seven laboratory workers and 42 minor employes."

In the face of this drastic instance of a corporation, and a lay corporation at that, practicing medicine which is as proper as it would be for the Illinois State Medical society to start a shoe factory may it be asked whether the Endicott-Johnson Shoe Company makes a profit on its dispensation of medical service at $52.60 per annum per family? If it does make a profit then it would have no retort courteous to make to the charge that it is PRACTISING MEDICINE WITHOUT A LICENSE AND SHOULD BE SEVERELY FINED AND PUT OUT OF BUSINESS.

IF IT IS NOT MAKING ANY PROFIT ON THIS SERVICE THEN IS NOT THIS CORPORATION DOING EXACTLY THE SAME THING THAT THE WRITER OF THE EDITORIAL APPEARING IN "THE PATHFINDER" ACCUSES PHYSICIANS OF DOING? THAT IS, MAKING THE RICH MAN PAY FOR THE POOR MAN?

That is exactly what is happening. With this great, great difference. In the cases where the physician charges the rich man for four operations and then goes out and does eight similar ones for charity and at a personal loss the transaction has been performed through medical men and not through merchants who see the essence of trade and barter in every action of life. It is hardly to be expected that the Endicott-John-

son Shoe company would hire a dentist, a trained nurse or a surgeon to supervise the labor in their tanning department or their export trade section or their shipping rooms. Yet that is exactly what is done by this bargain medical service.

The editorial quoted offers another alternative. That is to have the cost of medical care "subsidized by the state." From all that we have been able to find out the revenue of the state is obtained from taxes. It is a notorious truth that the tax schedule of the rich man rests more lightly on his shoulders than the similar burden on the shoulders of the poor man. The rich man has a thousand and one ways of so shifting his income and his returns that he does not, he cannot feel the grind of taxation as does the poor man. A twenty per cent. cut in a salary of $50,000 per annum or a four per cent. tax assessment of an income of $50,000 does not entail the hardship that ensues from a twenty per cent. cut in a salary of $500 per annum or a four per cent. tax assessment on that amount of income. Now if medical care ever becomes debauched to the point where it operates as a state subsidy what will be the result?

THE POOR MAN WILL BE PAYING NOT ONLY FOR HIS OWN BUT FOR A PORTION OF THE MEDICAL CARE OF THE RICH MAN.

And that too for a medical service of such impaired efficiency as even now is causing indignation in those very countries where compulsory health insurance is proving itself not only an old man of the sea but an old man with a venomous cobra in his hand.

It is well to know what you are preaching about before you begin to preach. Before you begin to search for a path it is well to realize just where the path is leading—to safety or to peril.

REPREHENSIBLE MEDICAL ENGLISH

Twelve Valuable Points in the Language of Medicine

1. "Case" must not be used for "patient," nor "cure" for "treatment."

2. "Tubercular" means "nodular"; "tuberculous" means "infected with the bacillus of tuberculosis."

3. "Cystoscope" is a noun and must not be used as any other part of speech.

4. It is possible to "operate a cotton-gin," *but it is not possible to "operate a patient"—nor his appendix.*

5. "Acute appendicitis" is common, but an appendix cannot be "acute."

6. "Acute abdomen" is beyond the pale.

7. "Pathology" means the "science of disease"; it is therefore absurd to speak of "pathology in the right lung."

8. "Positive serology" is the worst type of jargon; apparently "positive Wassermann reaction" is usually meant.

9. "Specific" and "luetic" are convenient to obscure meaning from patients' relatives, but "syphilitic" is better in writing for the medical profession.

10. It is incorrect to say the patient had "no temperature." One may say that there was "no elevation of temperature," but it is shorter to say there was "no fever."

11. "Shot" is perhaps the most abused and overworked word in medical literature . Shot is of lead.

12. Bad spelling is unpardonable, so a good dictionary is indispensable.

—Jour. Med. Assn. of Ga.

EDUCATIONAL COMMITTEE ILLINOIS STATE MEDICAL SOCIETY

Promotion of Health by Radio

Do you know that the Educational Committee of the Illinois State Medical Society sponsors health talks over the radio and that during the past twelve months over 400 have been given? Why not tell your patients to listen in at the following periods:

WGN—Tuesday noons—11:50 o'clock.

WJJD—Monday, Wednesday, Friday noons—11:45 o'clock.

WJJD—Every morning at 11:15 o'clock.

The above time is daylight-saving time, which is one hour ahead of standard time.

The *Chicago Daily News* on June 15, 1931, carried the following editorial concerning the promotion of health by radio:

"Dr. E. Starr Judd of the Mayo Clinic, in his presidential address, and other speakers at the Philadelphia meeting of the American Medical Association directed the attention of their pro-

fession, and of the nation generally, to the important part played, and to be played, by radio in the promotion of public health.

"Talks on various aspects of preventive medicine are exceedingly popular. The medical profession, in conjunction with the public health services, enjoys opportunities undreamed of in the past for the dissemination of useful information concerning modern means of preserving physical and mental wellbeing.

"The several seasons have their respective health problems. What to eat, how to dress, how to treat common colds, how to detect the first faint symptoms of disease and how to beware of quack nostrums are among the subjects welcomed by millions of persons possessing radio sets. Especially valuable is information on health to the residents of sparsely settled sections of the country, where doctors are few.

"Radio has many severe critics among the intellectuals, and broadcasters have much to learn from candid and just critics. It is but fair, however, to give credit to radio for the excellent work it is doing, and will do in ever increasing measure, for the welfare of the public."

RADIO TALKS PROVE POPULAR

During the past four years the Educational Committee has been most fortunate in being given generous time from the two stations WGN and WJJD. That the public listens in to these talks is shown by the fact that many requests for copies of the papers have been received from many states of the middle and far West.

HEALTH PROGRAMS ARRANGED FOR LAY ORGANIZATIONS

Do you know that during the year May 1, 1930-April 30, 1931, 553 health talks were scheduled by the Educational Committee. For the year 1931-32, lay groups are offered the following suggestions for health subjects to be presented by members of the Illinois State Medical Society:

MEN'S CLUBS:

1. Financial Value of Health.
2. The Business Man and His Stomach.
3. Disease Prevention and Health Preservation.
4. Health Problems in Illinois.
5. Animal Experimentation in Relation to Human Welfare.
6. What Everyone Should Know About Cancer.
7. Health vs. Business Inventories.
8. Physical and Mental Health.

WOMEN'S CLUBS AND PARENT TEACHER ASSOCIATIONS:

1. Health Problems in Illinois.
2. What Every Woman Should Know About Cancer.
3. Health Inventories.
4. Physical and Mental Health.
5. Our Duty to the Child in Prevention of Communicable Diseases.
6. Preparing the Child for Adolescence.
7. The Parent and Child Relationship.
8. Medical Science Protects the Child.
9. Animal Experimentation in Relation to Human Welfare.
10. Prevention of Disease.

HIGH SCHOOL ASSEMBLIES:

1. Our Debt to Medical Science (story of some famous scientists).
2. Some Important Phases of Health.
3. The Story of Infections.
4. Health Lessons Learned from the World War.
5. X-Ray and Radium.
6. What Every High School Boy and Girl Should Know About Cancer.
7. Health and Happiness.

OTHER SUBJECTS MAY BE SUGGESTED

All requests for speakers should be made through the office of the Educational Committee, Illinois State Medical Society, 185 North Wabash Avenue, Chicago, Illinois. Telephone State 4415.

THE MONTH OF JUNE BRINGS MANY REQUESTS TO THE EDUCATIONAL COMMITTEE

Member of the Department of Physical Welfare, University of Illinois, asks for material on flat feet, abnormal heart conditions, infantile paralysis, malnutrition, posture.

Physicians of Kewanee request assistance with diphtheria immunization campaign. Committee offers newspaper articles, material for speakers.

Kane County physician asks for material relating to health of children in rural schools.

Member of Evanston Woman's Club requests literature on cancer for distribution among the members of the organization.

President of the Woman's Auxiliary asks for copies of radio talks which might be of interest to the county auxiliaries.

Folders outlining the program of the Committee were furnished to all members of the Madison County Medical Society.

Eight obstetricians of the Illinois State Medical Society revised the pre-natal letters used by the State Department of Public Health.

MEDICAL LEGISLATIVE ACTIVITIES IN 1931 ILLINOIS STATE LEGISLATURE

Perhaps the economic depression had something to do with it. Whatever the cause, the recently adjourned session of the General Assembly was deluged with an unprecedented flood of bills, many of which would influence in one way or another the status of the physicians of Illinois. There were 2,031 bills introduced and about 200 were of especial interest to physicians. Tedious in extreme, it was nevertheless incumbent upon your Legislative Committee to review line for line each of the 2,031 bills in order to be fully informed of provisions which were of significance to the medical profession and to public health. The most important of these are listed herewith.

Those who wanted to break down the standards of medical practice appeared to have plenty of time and money to spend at the task. They manifested superior technique and great skill in lobby maneuvering. Their plan with the legislators was astutely devised as to make a tremendous appeal to those powerful human emotions which create spontaneous sympathy for the "oppressed" or "underdog." This strategy was pursued in such a way as to awaken no thought in the legislators concerning the interests which the public might have in medical matters. This method of procedure gave the cults an unusual degree of favor and even carried over to their side a few legislators who heretofore had stood steadfast for high educational requirements in medical practitioners.

Among the many cult bills creating new laws for special privileges the two osteopathic bills offered the most serious threat to the medical standards of Illinois. With 20 "ayes" they lacked but 6 votes in the Senate of carrying legislative approval which, if successful, would have given the osteopaths full and unlimited rights to do surgery. This is but one illustration of the difficulties incurred by your Legislative Committee in the Senate this year. Apparently the smaller membership led cult lobbyists to concentrate their efforts on that body. The economic unrest opened the way for the cults to bring what appeared to be a strong popular pressure to bear upon the Senators. On one occasion the Senate resolved itself into a "committee of the whole" to listen to what the cults had to say—a privilege usually reserved for none but the most important measures.

A particularly dangerous type of legislation, from the public health point of view, found expression in House Bill No. 484, which was the work of our friend, Percival L. Clark, of Sanitology fame, who never misses a session of the General Assembly, who is founder and administrator of the Percival L. Clark Foundation for Health Research and whose prestige is greatly enhanced by the outstanding prominence achieved by his father, Anson L. Clark, in the medical history of Illinois and by the fact that his son is an able ethical physician in this State. The bill was in the form of an amendment to the public school law and found audience under the innocent appearing and quiet title of "AN ACT TO ESTABLISH AND MAINTAIN A SYSTEM OF FREE SCHOOLS" APPROVED JUNE 12, 1909, AS AMENDED. This measure would have prohibited all public health work and health instruction in the public schools and would have reduced Illinois to the scientific level of another State which denounces the theory of evolution by legislative fiat. House Bill 484 got sufficient attention from the General Assembly to be introduced and referred to the House Committee on Education. It required attendance on the Committee hearing by a representative of the State Medical Society because chances dare not be risked in legislative matters. Dr. Andy Hall was instrumental in killing the measure in the Committee. Pledging and soliciting votes and the exchange of "senatorial courtesy" might produce surprising results under circumstances of reduced vigilance.

Another situation which illustrates the everlasting vigilance necessary to prevent bad legislation and aid the desirable is the usual system of procedure which crowds the legislative calendar during the closing days of the session. Final action on fully one-half of the 2,031 bills was deferred until the last two weeks of the session this year. The members were tired and wanted to go home. Most of the outstanding bills which had strong support or opposition had been decided upon. The hot weather reduced both interest and energy. Under these circumstances good bills often die from sheer lack of

some interested person to see that a legislator calls the measure for action. Bad bills may get through because nobody takes the trouble to be on the job and to call attention to undersirable features. It is well to take no chances during the closing days if there remain before the Assembly any live bill of interest to the Society.

These circumstances required your Legislative Committee to function with exceptional alertness, unusual vigor and tenacious perseverence. More than 8,000 pieces of literature were sent out on one occasion during a single week by your Committee. These included communications which went to "key" men in the medical profession in every Senatorial District in the State.

The splendid co-operation and effective work of the medical profession throughout the State overshadows completely the irksomeness of lobby duty and prompts your Legislative Committee to express its deep appreciation for that sympathetic and highly intelligent support which made possible the satisfactory results obtained. Prompt and appropriate responses on their part to suggestions for action had a very telling effect upon every delicate situation which developed here in Springfield. The officers and counsellors of the Society responded effectively to every request made upon them. The Chicago Medical Society and the Educational Committee were very helpful and effective. The editor of our medical journal gave every communication from the Legislative Committee prompt consideration.

Cook County was never better organized for expressing the views of the medical profession upon legislative matters. Each physician in the Metropolitan area was listed according to Senatorial District. That system made possible the concentration of effort at the point where the need was greatest. Due to this well devised organized system on a number of occasions during the recent legislative session, legislators were effectively reached at an opportune moment in pivotal areas in response to communications from your Legislative Committee.

The modus operandi of your Legislative Committee shows the effectiveness of work done by the medical profession on legislative matters. A system of checking on the attitude of each Senator and Representative was inaugurated in the office of the Chairman. The vote of each legislator on bills of interest to the committee was checked against the record of whether the legislator had been interviewed either personally by his family physician or through some other contact. An overwhelming majority of those interviewed voted satisfactorily to the interests of the medical profession. Legislators from districts where the medical profession was apathetic and took no significant interest in the controversies almost invariably favored the cults and drugless healers. This history shows clearly how legislation in this country must be influenced.

All difficulties to the contrary, however, the Society carried through its entire legislative program without a single setback. Without the splendid, sympathetic, prompt and appropriate co-operation of practically every physician in the State whose assistance was solicited, this success could not have been obtained.

Inquiries, requests for advice and assistance and letters of commendation which have come from quite a number of States indicate that the Society's legislative work in Illinois has attracted wide recognition. A very complimentary letter pertaining to this activity was received through Dr. Woodward of the A. M. A. from a prominent physician in London who desired more detailed information for use in combating the cult problem there.

The Leigslative Committee wishes to acknowledge with deep appreciation the receipt of hundreds of congratulatory letters. The Chairman made it a point to answer every personal communication sent to the Springfield office. The name of each physician who took the pains to write was placed upon the permanent mailing list of the Committee, which now embraces nearly 2,000 names well distributed throughout the State.

This final report would be incomplete if it did not recognize the unfailing help of the officers and councillors of the Society, who in every way aided the Legislative Committee, and without their individual help the success of the year's work would not have been possible.

A copy of any bill mentioned in this bulletin may be had upon request.

Edward Bowe, M. D.,
Thomas P. Foley, M. D.,
John R. Neal, M. D.,
Legislative Committee, Illinois State Medical Society.

THE MORE IMPORTANT MEASURES OF MEDICAL INTEREST CONSIDERED BY THE LEGISLATURE. MANY MINOR ONES ARE OMITTED

CULTS

S. B.	197	To regulate physio-therapy, a very low grade drugless healer bill	Defeated
S. B.	360	Giving the osteopaths the right to do sugery	Defeated
S. B.	361	Creating an Examining Board of Osteopaths	Defeated
S. B.	382	An attempt to elevate the chiropractic art	Defeated
S. B.	383	Creating a Board of Chiropractic Examiners	Defeated
S. B.	489	Relative to registering naprapaths	Defeated
S. B.	490	Creating a Board of Naprapathic Examiners	Defeated
S. B.	491	Defining Naprapathy, with very low educational standards	Defeated
H. B.	515	Another osteopathic measure	Defeated
H. B.	516	Still more osteopaths	Defeated
H. B.	886-887-888	All low-grade drugless healer bills	Defeated

ANTI-VIVISECTION

H. B.	453	The biennial anti-vivisection bill	Defeated

APPROPRIATIONS

H. B.	449	Appropriates $39,746,656 to the Department of Public Welfare	Passed
H. B.	586	For the Board of Vocational Education, $565,848	Passed
		Vocational rehabilitation of injured persons, $252,400.	
		Educating deaf, dumb, and blind children, $126,018.	
		Schools for crippled children, $200,000.	
		Disabled veterans of World War, $4,000.	
		Disabled veterans Spanish-American War, $3,000.	
		Veterans of Foreign Wars, $250,000.	
		Thirty-Thrid Division, War Veterans, $4,000.	
		Board of Education for the Blind, $25,000.	
		Chicago Board of Education for deaf and delinquent children, $132,373.	
H. B.	711	Appropriating $1,321,442 for expenses of the Department of Public Health.	Passed

BARBERS

H. B.	477	Amending certain sections in the Barbers' Act	Passed
H. B.	927	An attempt to liberalize the Barbers' Act	Defeated

BEAUTY CULTURE

S. B.	736	Liberalizing the so-called Beauty Culture Act	Defeated
H. B.	478	A similar attempt in the House	Defeated
H. B.	1069	Relative to the same	Defeated

BIRTH REGISTRATION

S. B.	278	Altering the method of keeping records	Defeated
H. B.	310-311	Two very laudatory measures introduced by the Department of Public Health and the medical profession to prevent coroners from shirking their duty in reference to those who die without medical attendance	Passed
H. B.	573	Another attempt to alter the keeping of records in reference to births and deaths	Defeated

BLIND

S. B.	29	An Act to make the State reimburse counties in full for blind relief	Defeated
S. B.	166	Would make relief for the blind payable out of the general revenue fund.	Defeated
S. B.	468	To aid blind students in securing higher education	Passed
H. B.	67	The ophthalmia neonatorum bill, changing the penalty of the present law for those who neglect to treat the eyes at birth rather than failure to report inflamed eyes. This was a very laudatory measure passed by the Legislature by a safe margin, but was vetoed by the Governor. The House voted to set aside the veto, but the Senate failed to concur. A most unfortunate decision on the part of the Attorney-General and the Governor	Vetoed
H. B.	98	Liberalizing the Blind Act	Defeated
H. B.	133	Small appropriation to the Board of Education of Aurora for blind education	Passed
H. B.	208	A similar measure for Springfield	Passed
H. B.	220	A similar measure for Evanston	Passed
H. B.	358	A similar measure for Decatur	Passed

BOXING

H. B.	261	Amending the Athletic Exhibition Act, specifying time when physicians are to examine contestants, and other provisions	Passed

BULLET WOUNDS

S. B.	268	An effort to penalize the physician and no other person for failure to report gun-shot wounds	Defeated

CORRESPONDENCE SCHOOLS

S. B.	48	A loosely drawn correspondence school act, not exempting the professions.	Defeated
H. B.	955	Providing a special board for correspondence schools. A very bad bill.	Defeated

CRIMINAL CODE

H. B.	976	Requiring a psychiatrist to examine every person convicted of a crime in counties of over 500,000	Defeated

DEAF

S. B.	134	Relative funds for education of the deaf	Defeated
S. B.	630	Creates a board of education for the deaf	Passed
H. B.	133-208-220-358	Referred to under blind.	Passed

DENTAL PRACTICE ACT

S. B.	471	Prohibiting corporations from practicing dentistry	Defeated
H. B.	554	A commercial effort to penalize dentists	Defeated

EMPLOYMENT HOURS FOR WOMEN

S. B.	121	Changing the statutory requirement from ten to eight hours, with certain exemptions, known as the Women's Eight Hour Bill	Defeated
H. B.	296	A similar measure to the above	Defeated

EPILEPSY

S. B.	221	To include post-encephalitis under the Epilepsy Act	Passed

MEDICAL SCHOOLS AND HOSPITALS

H. B.	484	An atrocious attempt to throw health teaching into the discard in the public schools. Spoken of elsewhere in this Bulletin	Defeated
S. B.	610	Providing liens for hospitals on any insurance the Patient may have	Defeated

S. B.	721-727	Creating a medical center commission for Chicago, were withdrawn in favor of H. B. 1142, a similar measure appropriating $5,000 for expenses	Passed
H. B.	192	Changing the position of a physician's bill in the administration of estates. A good measure but it failed	Defeated
H. B.	1100	Creating in the University of Illinois a department to examine toxicological specimens for coroners	Defeated

MIDWIVES

S. B.	232	Radically lowering the present educational requirements for midwives	Defeatde
S. B.	233	A similar effort to amend the Medical Practice Act	Defeated

NARCOTICS

H. B.	557	Making possession of hypodermic syringes by anyone other than physicians, dentists, etc., unlawful	Passed
S. B.	390	Setting forth a penalty for anyone carrying narcotics or drugs to prisoners	Defeated
S. B.	191	Repealing a portion of the Pharmacy Act	Defeated

NURSES

S. B.	68	Setting forth qualifications for public health nurses	Passed
S. B.	605	Withdrawn in favor of H. B. 1081, changing the age from twenty-two to twenty-one years for licensing nurses	Passed
H. B.	293	Exempting nurses from jury duty	Defeated

OLD AGE PENSIONS

S. B.	4	Relief not to exceed $260 a year over age seventy	Defeated
S. B.	92	Similar, with amount $360 a year	Defeated
S. B.	132	Would levy an annual tax of one-half of one mill on the dollar for old age pensions	Defeated
S. B.	388	Creates a commission to study old age pensions. Withdrawn in favor of S. B. 511, a similar measure	Passed
H. B.	165	Another old age pension bill	Defeated
H. B.	308	Also levying a tax for old age pensions	Defeated

WOOD ALCOHOL

S. B.	142	A wood alcohol measure	Defeated
H. B.	301	A wood alcohol measure	Defeated
H. B.	788	Regulating the sale of wood alcohol and its derivatives. An excellent attempt in the right direction	Defeated

WORKMEN'S COMPENSATION

There were eight or ten efforts to amend the Act, practically all of which had something to do with the physician's work.

S. B.	459	All were defeated except S. B. 459, and the proponents of the Bill acceded to all the suggestions made by your Legislative Committee and removed all objectionable medical features to the Bill	Passed

NEW LAW CLARIFIES CORONERS' DUTIES

To correct a situation which reflected seriously upon the integrity of the medical profession and which threatened the status of Illinois in the United States death registration area, the Fifty-seventh General Assembly of Illinois was asked to amend the Coroners' Act and the Registration of Births and Deaths Act, so as to make absolutely clear and unmistakable the duties and responsibilities of coroners and local registrars concerning the execution of death certificates in cases where death occurred without the attendance of a physician. The legislature granted this request when it passed House Bill No. 310 and House Bill No. 311. Both are now laws. In Bill No. 310 the amendment states specifically that in case of death without medical attention the coroner, instead of the registrar, shall be called and that the coroner shall proceed as set out in section 10 of the Coroners' Act. Both of these bills were introduced by Honorable Frank C. Thompson.

In Bill No. 311, which amends section 10 of the Coroners' Act, it is specifically provided that in all cases where death occurs without medical attendance the coroner shall be called and that he shall take charge of the body, make a preliminary examination and issue a certificate of death, or if death is not from natural causes then to hold an inquest.

In Cook County since 1928 the number of death certificates signed by local registrars jumped from 0 in 1928 to 1,070 in 1929 and to 1,605 in 1930. For the same reason deaths ascribed "unknown" causes in Cook County jumped from 13 in 1927 and 9 in 1928 to 97 in 1929 and 330 in 1930. Of the 330 deaths reported from unknown causes, local registrars signed 325.

The cause of this increase can not be shown in statistical computations. For that reason the student of vital statistics who has not access to the certificates holds the medical profession responsible for the excessive number of deaths for which the cause is unknown.

Because of the great increase in death certificates so executed in Illinois the federal bureau of the census took unfavorable notice of the situation, pointing out that from no other city in the United States than Chicago were so great a ratio of the deaths ascribed to "unknown" causes.

To ascribe a death to "unknown" causes is to make practically valueless a certificate of death from any but a purely legal standpoint. The number of deaths nor the death rate has any particular significance from a public health stand-

point unless the specific causes of mortality are known.

Nearly all of the 1,300 local registrars in Illinois are non-medical officials. They have no authority for calling witnesses or for otherwise collecting facts which would disclose the cause of death even if they were trained in this type of activity.

Coroners are often medical officers and they are clothed with legal authority which enables them to collect all pertinent information about deaths which occur without medical attendance.

The statutes as they now read make plain and unmistakable the duties of these officials, making mandatory on the coroner not only the investigation into the causes of death, but also the execution of death certificates in all cases where death occurs without medical attendance.

CONVALESCENT SERUM AND SODIUM CITRATE FREE TO PHYSICIANS

The last paragraph in an editorial which begins on page 117 of the January 10, 1931, issue of the *Journal of the American Medical Association* reads as follows:

"It is, indeed, fortunate that research institutions have taken up the burden of supplying convalescent poliomyelitis human serum, since this important health department activity has been quite neglected though Netter advocated its use in 1910. The value of such serums is apparently well established and of practical therapeutic importance even in the absence of controls. The prophylactic use of convalescent serum for susceptible contacts cannot be advocated until the supply can meet the drastic need of epidemic periods."

Acting upon this suggestion, the Illinois State Department of Public Health undertook to make available an adequate supply of convalescent poliomyelitis human serum sufficient to meet all anticipated needs in Illinois. At Springfield and Chicago there is now on hand enough of this serum to treat 200 cases. It is available free of cost to any physician in the State who will ask for it. Instructions concerning administration go with each therapeutic vial.

It is hoped that the medical profession will take advantage of this opportunity to use the serum. The collection of convalescent poliomyelitis serum entails considerable expense and involves no little time and effort. Furthermore, it appears that infantile paralysis is by far the most important cause of disability among the 16,000 physically handicapped children in Illinois. If the convalescent serum will prevent paralysis in these cases, and evidence indicates that it will, the physicians cannot afford to neglect its use when circumstances make posible the obtaining of it. Early diagnosis and the administration of convalescent serum prior to the onset of paralytic symptoms are imperative if paralysis is to be prevented.

The indications are that poliomyelitis prevalence will increase sharply during the next few months. All but 40 of the 404 cases which occurred last year took place after July, a total of 291 cases being reported during August, September and October. Past history of the disease suggests a return wave this year. Statistics indicate that over one-half of the untreated acute cases terminate either in death or permanent disability.

In all cases where the service is practicable a physician from the State Department of Public Health who is especially qualified in that field will be detailed upon request to consult with and assist a local physician in connection with the administration of the poliomyeltis convalescent serum.

For physicians who wish to use whole blood therapy for intramuscular administration, the Department has for free distribution a supply of sodium citrate. This will keep the blood drawn from the donors from coagulating prior to its use. Whole blood therapy seems to have a value in treating poliomyelitis cases while its benefit in preventing or aborting measles in children appears to be unquestionable. Physicians outside the range of easy and quick transportation facilities might profit by keeping on hand a supply of the sodium citrate for use in emergencies. Full instructions concerning the use of this material go out with each package.

ILLINOIS MATERNAL MORTALITY COMPARED WITH OTHER STATES AND FOREIGN COUNTRIES

Universal interest in the rate of fatal outcome of childbearing makes accurate information on this subject extremely important. From some sources we hear that the United States experiences a greater loss of mothers from puerperal causes than any other first class nation of the

world. This assertion is vigorously denied by others who stoutly maintain that statistics which show excessive rates in this country have not been properly analyzed or else they have been deliberately juggled in order to serve better the user's purposes.

In the official classification of deaths from puerperal causes, twelve sub-classes are used in order to give a clear idea to the student as to the factors involved in each fatality. When death certificates are honestly executed, the sub-classification when the data are compiled would seem to be sufficient to prevent false statements of significant magnitude. At the same time there are a number of factors involved which will cause certain differences that prevent statistics in different countries from being strictly comparable.

The question of abortions always arises in connection with maternal mortality. Unless a case has come before the coroner there is no legal means available to statisticians for going behind the death certificate. If false or dishonest statements have been expressed on the death certificate that falsity becomes a part of the official records of the community, state and nation.

On the other hand, it may be asserted by those who interest themselves in safeguarding motherhood that the loss is no less serious where abortion is the cause than when some other specific factor is the responsible lethal agent.

Then there is the matter of completeness of reports. Maternal death rates are computed in the United States on the basis of the number of live births while in most foreign countries both live and stillbirths are considered. Birth registration in the United States has never been as complete as death registration. It is quite possible that from 5 per cent to 10 per cent of the births which occur in this country escape registration entirely. An even larger percentage of stillbirths probably escape. Mary Breckenridge, superintendent of the Frontier Nursing Service of Kentucky, reports that a study made by her with the cooperation of the state registrar indicated a birth rate of 46 per 1,000 population among the mountaineers of Kentusky. The state reports annual rates that vary between 20 and 25. Similar conditions doubtless prevail in many other states. Europeans have the reputation of respecting laws and customs to a much higher degree than Americans. This suggests that birth registration is more complete in the European countries. That would cause an apparently lower maternal death rate. This is a point to bear in mind when comparing data.

The death rate attributed to puerperal causes varies strikingly and somewhat inexplicably from year to year in Illinois. In 1929, for example, there were 818 fatalities charged against these causes. In the year before the number was 694, and it was 717 in 1927. The 1928 figure was 848. The number of births has declined each year since 1926. This peculiar variation in the maternal death rate, which bears no relation to the birth rate, suggests that unlawful abortions account for a significant number of fatalities. Tangible evidence to prove that suggestion does not appear on the death certificates, however.

Statisticians must abide by the information found on the death certificates. Analyzed with as much detail as the data permit, this information is set forth for Illinois in Table 1, showing the experience since 1927.

TABLE 1

DEATHS FROM PUERPERAL CAUSES, ILLINOIS

Rate per 1,000 births.	1929		1928		1927	
	No.	Rate	No.	Rate	No.	Rate
Abortion	20	1.3	8	.6	23	.2
Ectopic	58	.4	38	.3	43	.3
Other accidents of pregnancy	17	1.3	15	1.1	15	1.
Puerperal hemorrhage	102	.8	72	.6	81	.6
Cesarean	37	.3	31	.2	41	.3
Other surgery	12	.9	9	.7	6	.4
Accidents of labor	57	.4	55	.4	35	.3
Puerperal septicemia	282	2.0	237	1.8	234	1.7
Puerperal phlegmasia, alba dolens, embolus, sudden death	34	.3	38	.3	47	.3
Puerperal albuminuria and convulsions	103	1.5	181	1.4	187	1.4
Following childbirth (not otherwise defined)	4	.3	10	.8	3	.2
Puerperal diseases of breast	2	.1	0	—	3	.2
Total	818	6.3	694	5.2	717	5.1

The subclassifications are international in scope so that a careful compilation of deaths should result in strictly comparable data. On the other hand, if the cause of deaths which result from unlawful attempts at abortion or unlawful operations is hidden in death certificates under such items as puerperal hemorrhage or

any one of several others, there can be no justifiable comparison of statistics in one country with those in another except upon the grounds that such practice is universal. In a State the size of Illinois, the inclusion of 75 to 100 deaths which are unlawfully attributed to natural puerperal causes, would make a high rate instead of a moderate or even a low rate.

In New South Wales, a state of Australia which, with a total population of about 2,500,000, reported 351,160 visits of expectant mothers to health centers during 1929, apparently exercises the greatest care in classifying maternal deaths. "Every death of a woman during the child-bearing period in which there is any possibility of a puerperal relationship, is considered as being due potentially to puerperal causes until or unless proved otherwise," says the director of the division of maternal and baby welfare in his 1930 annual report. "These deaths," he continues, "having been collected in the first instance by the Government Statisticians' Department, are referred to this Division so that a complete investigation may be made by a medical officer."

The number of maternal deaths attributed to illegal operations under this carefully executed scheme varies from 3 per cent to 15 per cent of the maternal deaths from all puerperal causes. The average for the 9 years, 1920-1929, was 11.8 per cent. with a low (1928) of 9.7 per cent. and a high (1926) of 14.5 per cent. Excluding these deaths the maternal mortality in New South Wales was 5.6, 5.4 and 4.6, respectively, for 1927, 1928 and 1929. Including the deaths from illegal operations the rates per 1,000 births for these years in New South Wales and from all causes returned as puerperal in Illinois, were as shown in Table 2.

TABLE 2

MATERNAL DEATHS PER 1,000 LIVE BIRTHS

	1929	1928	1927
New South Wales	5.3	6.0	6.5
Illinois	6.3	5.2	5.2

If it is assumed that 10 per cent of the births in Illinois are not reported, the actual maternal death rate per 1,000 births, when allowing for this shortage, falls to a point below that in New South Wales and that in many nations.

Except for 1929 the Illinois rates compare favorably with those of New South Wales, whether the fatalities from illegal operations are included or not. The most unsatisfactory feature of the comparison is the sharp decline in the 1929 New South Wales experience and the sharp increase in that of Illinois.

The New South Wales data were used for comparison because the state is relatively new, like Illinois, and because the maternal hygiene program seems to be unusually well organized and carried out. Also the statistics are collected with great care for accuracy.

Aside from other considerations there comes the personal equation for which the medical classifier is responsible. Death certificates call not only for the cause which in the opinion of the physician immediately precipitates death, but for any contributory cause or causes of which there is knowledge. Thus if a pregnant woman is involved in an automobile accident and dies three weeks later from puerperal hemorrhage, the latter might be put down as the cause and the automobile accident as the contributory cause. One medical classifier would record the death as of puerperal origin and another of accidental. Thus statistics in one nation may differ significantly from those in another for no other reason than a difference of opinion between classifiers.

The Illinois statistics compiled at Springfield by a medical statistician of long experience and first class training show a noticeably lower maternal death rate than the statistics compiled from the same certificates at Washington by the federal bureau of the census. The figures for three years are given in Table 3.

TABLE 3

ILLINOIS MATERNAL MORTALITY PER 1,000 BIRTHS

	1929	1928	1927
Federal statistics	6.8	5.7	5.6
Illinois statistics	6.3	5.2	5.2

The higher rates attributed to puerperal causes by the bureau of the census indicate a liberal attitude on their part toward maternity as a hazard of life. The rates computed in Illinois are 7 per cent lower than those computed in Washington. That degree of difference on a national scale would indicate an enormous difference in the number of deaths attributed to puerperal causes by a liberal classifier as compared with one who allows contributory causes to account for some fatalities.

The Illinois statistican assigned 818 fatalities to puerperal causes in 1929. Using identically similar death certificates the U. S. bureau of the census assigned 874 deaths to puerperal causes in Illinois in 1929. While it is felt that the Illinois statistician placed in the puerperal classification every certificate which should have been so classified without reasonable doubt, this difference in classifying is pointed out merely to indicate how the personal factor creeps into statistical computations in a perfectly honest way which sometimes makes significant differences in the conclusions.

In New York state the health department statistician assigned 1,172 deaths to puerperal causes in 1929, while the federal bureau of the census placed the number at 1,216. For the same year the state figures in Pennsylvania were 1,150 against 1,232 by the federal statistician. Thus for Illinois, New York and Pennsylvania the federal statistician assigned to puerperal causes in 1929 a total of 180 more deaths than did the state statistician. At this rate the 15,-084 deaths attributed to puerperal causes in the United States registration area in 1929 was 900 higher than would have been so classified by the statistician in either of the three states named.

If it is presumed that birth registration is 10 per cent less complete in the United States than in most foreign countries where statistics of a comparable character are kept, and if it is assumed that the federal bureau of the census is 6 per cent more liberal than are the foreign statisticians with regard to puerperal causes of death, then the maternal death rate for the United States in Table 4 in the 1928 column would be 5.6 instead of 6.7, and the rate in the 1927 column would be 5.4 instead of 6.4. This change would make the maternal death rate in the United States compare much more favorably than it does with those in foreign countries.

The statistics in Table 4 are the latest and most complete available from the statistical office of the League of Nations.

The considerations set forth above suggest that our conditions of maternal hygiene may not be as bad as the unanalyzed statistics indicate. There is, however, plenty of room for improvement.

TABLE 4

DEATHS FROM PUERPERAL CAUSES PER 1,000 BIRTHS AND STILLBIRTHS

	1928	1927
Australia	...	6.1
Czechoslovakia	3.9	3.5
Denmark	2.6	2.1
Egypt	3.8	3.7
Estonia	4.9	4.0
Finland	...	3.0
Germany	...	3.5
Greece	6.3	6.0
Hungary	3.3	3.0
Netherlands	3.4	3.4
Norway	...	2.4
Sweden	2.5	2.3
Scotland	7.0	6.4
Northern Ireland	5.2	4.8
Uruguay	2.3	2.1
England and Wales	4.2*	4.1
UNITED STATES	6.7	6.4

*Per 1,000 Live Births.

SUICIDE IS BECOMING A NATIONAL HABIT AND A SOCIAL PROBLEM OF FIRST IMPORTANCE

That gentle gesture, suicide, appears to be one of the socialistic fashions this once supersane government is adopting along with bureaucratic control, a superfluity of statutes and other conspicuous non-democratic ideas of decadent old-world countries.

In "The Spectator," a New York insurance journal of high repute, Dr. Frederick L. Hoffman claims that suicide is not only becoming a national habit and a social problem of the first importance, but he advocates organization of a national society for its study and prevention with branches in all cities.

Writes Dr. Hoffman in part:

"Every student of the suicide problem knows full well that adequate methods of prevention could easily save a large proportion of deaths from self-destruction, which now measurably increase our annual death-rate.

"On the basis of current statistics, the annual loss of life by suicide in Continental United States may be conservatively estimated at between 18,000 and 20,000.

"Unfortunately, there are no means of estimating accurately the number of attempts at suicide in this country which fail, but which in the light of such data as are available, easily reaches 30,000 and probably more.

"In other words, combining the suicides who succeed with those who fail, there are some 50,-000 more or less mentally unbalanced persons in

this country, of whom every year about two-fifths succeed in putting an end to what is, in many cases, a life well worth saving.

"What is needed is national organization well equipped to concern itself seriously and effectively with both the scientific study of the subject and methods of prevention and relief in the many cases which can be saved from the ignoble fate of self-destruction.

"The suggestion offers the greatest present-day opportunity to intelligent philanthropy to render service of the greatest possible value to the nation.

"The suicide death-rate of one hundred American cities has increased from 15.4 per 100,000 population in 1900 to 20.0 in 1930. Although it jumped as high as 21.5 in 1908, that was an exception. A distinct upward trend occurred during the last decade. The twenty cities with the highest suicide rates are Little Rock, Arkansas; Davenport, Iowa; Sacramento, California; San Francisco, California; San Diego, California; Terre Haute, Indiana; Richmond, Virginia; Spokane, Washington; Portland, Oregon; Tacoma, Washington; Denver, Colorado; El Paso, Texas; Jackson, Michigan; Pueblo, Colorado; Indianapolis, Indiana; Oakland, California; Manhattan and Bronx, New York; Gary, Indiana; St. Louis, Missouri; Tampa, Florida.

"The rates for Little Rock and Davenport, being based on comparatively small populations, must be accepted with reserve.

"The localities indicate that suicides are not limited to large cities, but occur throughout the country, even in the smallest villages, where life is supposed to be free from the harassing anxieties of the modern struggle for existence.

"The nation may well pause and reflect upon the tragedy and sorrow and great economic loss represented by some 20,000 cases of self-destruction, and by possibly 30,000 or more attempts at suicide, which for some reason or other failed of their purpose during the year under review.

"Half of these, I feel sure, could have been prevented; and I speak in the light of forty years of an active interest in the subject of self-destruction, believing that if timely aid and qualified advice were forthcoming at the right time, many a valuable life might be spared.

"Only a national society for the purpose of studying the prevention of suicide, with branches in all the principal cities, can hope to cope with the problem in all its vast and intricate ramifications.

"Society itself is largely responsible for a large share of the annual toll of deaths by self-destruction.

"For it is the shams of our civilization that lie at the root of the evil and are the productive causes of the confusion which inevitably at present drives thousands to seek in suicide the only way out."

Further Dr. Hoffman notes that business depression invariably results in numerous suicides; that an increasing number of those who end their lives do so by jumping from the higher floors of tall buildings and that there are countless cases where murder and suicide are combined.

"From the bridge which spans the rocky gorge of the Arroyo Seco, one of the most beautiful spots in the beautiful garden city of Pasadena, Calif., thirty-two men and women have hurled themselves to destruction. This Colorado street bridge has become such a temptation to would-be suicides that the Pasadena police plan to install safety nets on each side of bridge. The *Boston Herald* remarks on this situation: "Pacific Coast cities as usual report suicide rates above the average. This phenomenon is attributed to the climate and to the fact that many persons go there in a final effort to recoup their health or their fortune, and failing, take their lives."

CHICAGO MEDICAL BLUE BOOK DIRECTORY

One of the handiest volumes that comes to our desk is the Chicago Medical Blue Book Directory. Published by McDonough & Company, 11 East Austin Avenue, Chicago, Illinois. The forty-third annual edition is just off the press and as usual contains accurate data of physicians, surgeons and druggists. There are 6,488 physicians and surgeons and 2,314 druggists listed in its pages with detailed data and information relative to each. There is also a wealth of information of every day use to physicians, dentists, and druggists concerning medical organizations, societies, hospitals, sanitariums, medical schools and colleges.

As a convenient ready reference medical di-

rectory the Chicago Medical Blue Book is invaluable.

The compilers of the book are to be congratulated on the general chronological arrangements throughout. This is important when one wants authentic information of present and past medical affiliations of our physicians and surgeons. The price of the Blue Book is $7.50 per copy.

ILLINOIS PHYSICALLY HANDICAPPED POPULATION 16,000

Definite records show that there are 10,011 physically handicapped individuals under 21 years of age in Illinois. It is estimated that reports still to be received will bring the number of recorded cases up to 12,000. These statements are found in the report of the Commission on Physically Handicapped Children, appointed by the Governor in conformity with a joint resolution of the Fifty-sixth General Assembly. The Commission has been active for many months and has been surprisingly successful in obtaining first hand information on the handicapped population. The report includes fairly complete records from 64 counties and partial records from 13 other counties. On the basis of these data the Commission estimates that there are 2.2 physically handicapped children per 1,000 general population or a total of more than 16,800 in Illinois.

Of outstanding interest in the report are the causes to which the handicapped conditions were attributed. Infantile paralysis was designated three times as frequently as any other single cause. In an analysis of 7,716 case records which were complete enough to justify classification, responsibility for the handicapped conditions appears as follows:

Infantile paralysis	2,308
Spastic paralysis	1,062
Bone infection	907
Tuberculosis of spine	650
Accidents	555
Congenital deformity (unspecified)	497
Congenital deformity of joints	468
Club foot	418
Bow legs from rickets	386
Flat feet	268
Arthritis	197
Total these causes	7,716
Miscellaneous	2,295
Total	10,011

The remainder of the 10,011 handicapped whose location is known owe their condition to a large group of causes that includes such things as heart disease and malnutrition.

The very large part played by infectious diseases in the production of the physicially handicapped gives to this problem an important public health feature. Infantile paralysis alone is credited with responsibility for 23 per cent. of all the physically handicapped child population. To no other single cause is attributed more than 7 per cent. of the crippling conditions recorded. Spastic paralysis and bone infections were credited with 10 and 9 per cent. respectively, but these two are groups of causes.

It is probable that most of the physically handicapped conditions attributed to infantile paralysis in this report have developed since 1916. Since that year 4,425 cases of that disease have been reported. These case reports are admittedly incomplete. So is the census of physically handicapped. If the ratio between the reported and the total of the two conditions is about the same, it appears that 52 per cent. of persons who suffer attacks of infantile paralysis are left with more or less permanent physical deformity.

Another important factor is mortality. Since 1916 infantile paralysis has been charged with 1,033 deaths in Illinois. Thus it appears that 3 out of each 4 cases of this disease prove either fatal or physically disabling to the victims.

This consideration suggests the importance of utilizing to the utmost the facilities for preventing and treating the disease. To this end the State Department of Public Health has collected and offers free to physicians convalescent serum. Early treatment with this serum prevents the onset of paralysis in a high percentage of cases and reduces the mortality to a minimum, according to reports on experimental observations. Pasteurization of milk, the isolation of cases and the avoidance of crowds by the susceptible are important ways to prevent the spread of infantile paralysis.

Tuberculosis of the spine was given as the cause of deformity in 650 cases. Prevention of this condition depends to a considerable degree upon the eradication of bovine tuberculosis and upon the pasteurization of milk.

Communicable diseases of one kind or another were probably important factors in producing the crippling condition in many of the other physically handicapped. Perhaps 40 per cent. of the difficulty could be traced rather definitely to infectious diseases. This indicates the magnitude and importance of the public health problem in connection with reducing the physically handicapped population.

Malnutrition was charged with the responsibility of 386 cases of physical impairment that were reported as handicapped. Club feet were found in 418 children. Preventing malnutrition is simply a matter of reasonably good infant and child care. Where active disease plays no pronounced part the proper balancing of the diet together with a reasonable amount of sunshine keeps nutritional difficulties from arising.

Club foot can nearly always be corrected satisfactorily by surgical measures. Many cases have been so skillfully managed that nothing short of a most careful examination would disclose evidence of the former condition.

In short, there are available preventive and corrective facilities which, if fully applied, would cut down the future handicapped population and reduce tremendously the impairment of those now suffering.

AMERICAN CONGRESS OF PHYSICAL THERAPY

The tenth anniversary session of the American Congress of Physical Therapy will be held October 5, 6, 7, 8, 1931 at the Hotel Fontenelle, Omaha, Nebraska. Appreciating the desirability of clinics and clinical demonstrations, the program committee has set aside the mornings for these purposes. It will be the first time that the society will have available ample clinical material for medical and surgical services. The cooperation of the University of Nebraska, College of Medicine, and the Creighton University School of Medicine has made this possible. In the section on Eye, Ear, Nose and Throat, tonsil clinics will be conducted daily during the first three days of the meeting. Electrosurgery for tonsils has found a definite place in the armamentarium of many surgeons. Prominent specialists will demonstrate the various methods and technics now being employed.

The subject of fractures will be thoroughly covered in the surgical clinics. Leading orthopedic surgeons will demonstrate every phase of the work emphasizing the indications and contro-indications for physical therapy.

In the medical section and in the medical clinics every allied specialty is represented. The subject of pneumonia will be adequately discussed as will such subjects as come in the fields of pediatrics, gastro-enterology and dermatology. Massage, therapeutic exercise and hydrotherapy will be presented by specialists in these fields.

An unusual feature of this tenth annual gathering is the fact that numerous local and state organizations are lending their efforts for its success. Among these are the Omaha-Douglas County Medical Society, the Omaha Roentgen Ray Society, the Nebraska division of the American Society for the Control of Cancer and several others. A joint meeting with the Omaha-Douglas County Medical Society will be held on Tuesday evening, October 6.

For preliminary program and other information write to the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

Correspondence

A CORRECTION

Dear Doctor Whalen:

In my article on "Carbon Monoxide Poisoning," Volume LIX, No. 5, May, 1931, I find a typographical error under *Treatment,* page 387, line 10, which should read carbon dioxide instead of carbon monoxide. Could a short notice of this error be inserted in one of the future issues of the ILLINOIS MEDICAL JOURNAL?

WM. D. MCNALLY, M. D.

INCREASE IN POLIOMYELITIS IN ILLINOIS

Springfield, Illinois, July 3, 1931.

To the Editor: In view of the fact that 404 cases of poliomyelitis were reported in this state last year, with 60 deaths; and in view of the fact that recent investigations and experiments have indicated that convalescent serum is the very best treatment when administered early before symptoms of paralysis occur, the State Department of Public Health has recently collected convalescent serum which is now available.

Enclosed herewith is an article, which, if you would give it some publicity would no doubt be welcomed by the physicians who are unfortunate enough to meet some of these little sufferers, and would be glad to avail themselves of this serum which can be had without cost by applying to the Department of Public Health. (Page 101.)

You will also find some information concerning Maternal Mortality in this state in comparison with that of some other states and foreign countries. *I know you have been interested in this matter and have always thought that the statistical comparison was made on a different basis in foreign countries from the way that our data are collected, which is absolutely true.*

Enclosed also find a leaf from our HEALTH MESSENGER giving a summary of the survey of Physically Handicapped under the age of 21 years, in this state.

Andy Hall,
Director, Department of Public Health.

UNDULANT FEVER A BRUCELLA INFECTION

To the Editor: After carefully studying 35 cases of Undulant Fever (The Mimic) in my personal practice, I sincerely believe Hodgkin's disease to be a Brucella infection.

Certain statements made by earnest workers on Hodgkin's disease in the past and a careful comparison of the clinical course of both these maladies in my private practice, leads me to make this open appeal to the profession, to either approve or disapprove this opinion.

The laboratories of the State Department of Public Health, I am sure, will make any test, culture or tissue examination from Hodgkins

cases, if specimens are submitted with the request of just what is desired.

Trusting you will find space for this open appeal.

R. O. Stites, M. D.

ILLINOIS HOSPITAL DATA

On the average each group of 120 people in Illinois supports a hospital bed if the 33,286 beds maintained in Federal and State institutions are taken into account.

The 64,063 beds and 3,297 bassinets are housed in 394 hospitals and sanitariums distributed throughout the state. Of the institutions 85 are controlled by the public, 94 by churches, 12 by fraternal and industrial agencies and 173 by private individuals or organizations. The public, fraternal and some of the church hospitals and sanitariums draw heavily upon public funds and voluntary donations for financial support while some of the church institutions are able to operate upon income from patients alone only because of a heavy contribution of personal services.

The cost of maintaining an occupied bed in the county tuberculosis sanitariums varies from $750.00 to $1,500.00 per year. The average minimum cost of an occupied hospital bed is probably no less than the smaller figure. This gives a basis for estimating the cost of hospital service in Illinois.

Of the 394 hospitals and sanitariums, 30 did not meet the requirements of the American Medical Association for listing in its latest register.

The hospital beds were 68 per cent occupied during 1928 and the total number of strictly hospital beds was in the ratio of 1 to 255 people.—*Illinois Health Messenger.*

TREATMENT OF PLACENTA PRAEVIA

According to M. Pierce Rucker, Richmond, Va. (*Journal A. M. A.*, May 9, 1931), there are certain fundamental principles in the treatment of placenta praevia that should be observed whether the patient is treated in general practice or in a well equipped obstetric hospital. The significance of a hemorrhage in the last half of pregnancy should not be minimized. Too often the patient is encouraged with the hope that it will not recur. No pelvic examination should be made until everything is in readiness to manage the patient should it be found that the placenta is presenting. A vaginal pack done as a makeshift, i. e., until help can be secured or the patient can be taken to a hospital, probably does more harm than good. A better plan is to give the patient a dose of morphine and disturb her as little as possible. The importance of blood transfusions is self-evident. One cannot show the cervix too much respect. Dilatation should not be hurried and should be complete before any operative delivery, except a Braxton Hicks version, is attempted. If Voorhees bags are used, a number 5 is preferable. When the bag is about to come through the cervix the patient should be on the delivery table and everything should be in readiness for an immediate delivery should that be necessary. The extra-ovular placement of the bag is preferable. Postpartum hemorrhage has not been a problem in the author's cases, but its danger should be constantly borne in mind. In the interest of the child, cesarean section has a place in complete and partial placenta praevia.

A GOVERNOR LOOKS AT CHIROPRACTIC

Governor Buck of Delaware has returned to the legislature, without his approval, a bill to create a board of chiropractic examiners and to regulate the practice of chiropractic. His summarization of the reasons for his veto is so clear and terse that it should be read by the legislators and governors of every state that is threatened or already afflicted with this cult. His statement follows:

The purpose of the act, as I understand it, is to legalize the practice of chiropractic in this state. Practitioners of this cult are not recognized now. Do they profess to be doctors in the same sense of the term as is commonly understood to apply to men and women of the medical profession? In so far as I am able to determine, there is not a recognized medical school in the country that includes in its curriculum a course in chiropractic. This fact in itself seems singularly significant.

Even to the lay mind the idea that all disease of whatever character is due to spinal displacements of a mild sort, and that cures of such ailments as tuberculosis, smallpox, diphtheria, scarlet fever and others can be effected by manipulation and fingering of the spine is preposterous.

Before returning this bill to you I have satisfied myself that the training and education a chiropractor, or drugless healer, needs to practice his art does not fit him properly to advisedly treat the sick, inasmuch as he is not qualified to diagnose ailments nor recognize communicable diseases and to take measures to control them. He is therefore an opponent to the department of health.

Wherefore, it seems to me it would be inconsistent for the legislature to appropriate, as it will do, money for the state board of health, which board is trying to eradicate communicable diseases, and at the same time legalize the practice of a cult which does not believe in the germ theory of a disease but does teach and believe that such diseases as scarlet fever, etc., are due to a distracted vertebra and the method to prevent and cure such disease is to see that everybody has a normal spine. —Jour. A. M. A., April 4, 1931.

VOCATIONAL GUIDANCE

The expert had established quite a reputation for his ability to fit people into their right employment niches. One day a husky young Greek called upon him.

"What is your name?" inqured the vocational expert.

"Gus Poppapopupopulous," replied the Greek.

"Get a job selling motorcycles," advised the expert, promptly.

Original Articles

ACUTE PANCREATITIS*

PERCY E. HOPKINS, M. D.
CHICAGO

It is usually held that acute pancreatitis is a rare condition and that it is extremely difficult to recognize. This is not necessarily true and a resume of the condition laying stress on the less violent processes with the more recent concept of their treatment may be of value in producing more accurate diagnoses and lowering the present high mortality (50-75%).

Etiology. Embolic processes in the pancreas being very unusual, they are mentioned merely as possibilities as are the other acute pancreatic involvements occurring as manifestations of generalized infections, such as mumps, scarlet fever and typhoid.

The pancreas becomes affected by the injury sustained as a result of bile or intestinal content reaching it through the ducts or possibly an infection carried to it through the lymphatics from the biliary tract. A spasm of the sphincter of Odi as described by Archibald[1] or a plugging of the ampulla of Vater by a stone may cause bile to be forced into the pancreas. This condition has been proven by Cameron and Noble[2] to be an anatomic possibility in about 65 per cent. of persons at autopsy.

Experimentally liver bile, or bile free from mucin, produced pancreatitis more often. It is also held that it is possible for the duodenal contents to reach the pancreas through the duct of Santorini inasmuch as its opening is not controlled by a sphincter.

The theory of Maugeret has many staunch adherents who agree that acute pancreatitis is a lymphatic infection from the liver and bile ducts which is carried to the pancreas by the periductal lymphatics although recent work by Kodama[3] and also by Archibald[4] has failed to show any such lymphatic connection to the pancreatic substance proper.

Gall stones and biliary tract infection have been noted in 50 per cent. or more of the recorded cases, however, and it is probable that several factors underlie the etiology and that the acute hemorrhagic type with more or less massive necrosis is produced by some chemical action with the production of a rapid pulse poison. (Muller[5]).

Suppurative pancreatitis may be present initially with the formation of an abscess with a milder clinical course.

Pathology. The organ usually is enlarged to 2 or 3 times its normal size; hard, edematous and shows a marbled surface on section. Dependent on the degree of hemorrhage, the surface shows irregular yellow, red or almost black areas. The hemorrhage may be slight or absent and then the surface shows a dull white or yellow, dotted with areas of fat necrosis.

One may find the whole gland or a part of it extruded as a slough in an abscess cavity which may also contain bloody fluid such as was encountered by the author in a recent case.

Another group of cases according to Archibald show moderate enlargement and hardness often confined to the head with edema, leucocytic infiltration areas of aseptic necrosis, thickening of the stroma and eventually a marked inter and intralobular fibrosis. These cases probably belong to the subacute group and are mentioned because some of them are not operated on until these changes have occurred.

The very characteristic areas of fat necrosis which are due to the action of lipase splitting the fatty acids and glycerine and then being saponified occurring in the mesenteric and omental fat principally but almost anywhere else in the body fat, frequently cause the recognition of a pancreatic involvement that might otherwise be overlooked. These areas are eventually reabsorbed if the outcome is favorable.

Opie and Meakins[6] proved several years ago that the fundamental lesion is a necrosis of the cells in the interior of the lobule, spreading to the periphery; the lesions of inflammation being secondary and due to a less irritating action such as may occur in the peripheral cells and the stroma because of the greater dilution of the irritating fluid in this region.

As a result of the autodigestion of portions of pancreatic substance, split products of protein digestion are thrown into the circulation and it

*Read before Section on Surgery, Eighty-first Annual Meeting Illinois State Medical Society, East St. Louis, May 6, 1931.

is thought this may be the cause of some of the rapidly fatal endings.

Symptoms. If one accepts Archibald's[7] classification of acute pancreatitis; 1. Hyperacute pancreatic necrosis, 2. Acute pancreatic necrosis, 3. Subacute pancreatitis and 4. Acute pancreatic edema; the symptoms will include those occurring in the pancreas as a result of the interference with its physiological function; those due to obstruction of the common bile duct, the peritoneal signs; and the symptoms due to an interference with the sympathetic nervous system. This is probably the most tenable grouping offered.

1. Hyperacute pancreatic necrosis. This condition is almost uniformly fatal, death being due to a true neurogenic shock produced by pressure of hemorrhage and exudate on the solar plexus or as a result of absorption of histamin being produced by proteolytic action in the pancreas. The pain is violent; being usually not amenable to morphine; is always in the epigastrium going through to the back; vomiting is quite constantly and persistently present; the patient rapidly goes into shock and usually dies either within the first few hours or within the first two days.

2. Acute pancreatic necrosis. This condition represents an involvement less severe than the hyperacute but the patient may also die within a few days as a result of toxic absorption or because of other later complications. The patient is not so violently shocked and the symptoms of jaundice, peritonitis or ileus may follow within the first 24 or 48 hours. The location of the pain is the same as in the more severe type. Frequently this type of individual is operated on with a diagnosis of acute intestinal obstruction or acute generalized peritonitis. Usually some rigidity and frequently the evidence of fluid in the peritoneal cavity are present. These two types of cases occasionally show definite pallor or even a cyanosis which is not constantly present but which when present is considered quite pathognomonic. Jaundice may or may not be present in this type.

A. K., white male, 39 years of age, with a history of cholecystectomy, 6 years previously, and with a history of occasional, indefinite indigestion, taken violently ill during the night with pain in the epigastrium, sharp and boring in character, going through to the back, accompanied by marked vomiting and considerable prostration, seen about 8 hours after onset of the attack. Patient quite restless, having an appearance of pallor and being that of an individual suffering from considerable pain with quite marked abdominal distention with location of tenderness quite generalized in the upper abdomen. Temperature 101, pulse 140, white blood count 19,000, urinary findings negative. Enemas gave but temporary relief with no appreciable effect on distention. Diagnosis of acute intestinal obstruction was made and laparotomy recommended. Operated on 14 hours after onset of attack with typical picture of bloody fluid in peritoneal cavity, multiple areas of fat necrosis and no mechanical intestinal obstruction. Pancreas quite large and edematous, particularly the head. Gastro-colic ligament split. Pancreas markedly swollen, dusky in hue but with no necrotic areas at this time. Cigarette drains down to the region of pancreas, common duct not visualized. Patient made uneventful recovery.

3. Subacute pancreatitis. The symptoms are definitely milder, being those of a sudden severe epigastric pain accompanied by vomiting and some prostration with recovery being the rule but with probably in many instances, if operative interference is not made, a conversion into a chronic type of pancreatitis.

Mrs. S., aged 28 years, admitted to the hospital per ambulance, with a diagnosis of acute appendicitis. Patient gave a history of having had occasional attacks of indigestion accompanied by epigastric pain, one, which three months previously, had been sufficiently severe to cause her to go to bed and have medical care. This attack began 4 days previously with severe epigastric pain, vomiting and considerable prostration. Constipation was present. Patient not appreciably distended but had a definite mass in the epigastrium which was very tender to the touch. Some abdominal rigidity was present, urinary findings were negative, white blood count was 21,000. Diagnosis of acute pancreatitis was made. Patient was still having severe epigastric pain—patient operated on under spinal anesthesia. Gastro-colic ligament was split and a large dusky pancreas protruded quite close to the abdominal wall. Capsule of the pancreas was opened in one of the more hemorrhagic areas and a considerable amount of bloody fluid with some slough escaped. The pancreas having previously been sutured to the parietal peritoneum, a rubber tube was inserted into this opening. This patient also made an uneventful recovery.

4. Pancreatic edema or mild acute pancreatitis. This is the condition upon which it is desired to lay stress. This condition probably occurs more frequently than is commonly recognized and is due to an acute edema of the pancreas produced by the influx of normal bile into the pancreas with a resultant congestion, edema and probably some small hemorrhages, all of

which disappear within a few days. This was observed by Archibald in 1913 and confirmed later by Zoepffel[8] in 1922. These individuals have sudden severe definitely localized attacks of sharp agonizing epigastric pain, quite frequently going through to the back just to the left of the midline and being accompanied by nausea, vomiting, pallor and possibly some slight prostration. These attacks usually disappear within a few hours but may leave the quite typical epigastric tenderness for several days. Epigastric tenderness is rather a constant finding in pancreatitis if the pain is not so violent as to preclude its recognition by the patient. Jaundice may be present quite early due to pressure on the common duct. Probably many of these cases are diagnosed as biliary colic, peptic ulcer pain or perforation, or acute indigestion and it might be difficult to determine which cases are those of mild pancreatitis. The relatively short duration of the pain, however, its definite and typical location; its rather prompt response to an opiate (after other things have been excluded from the diagnosis), the localized tenderness with its persistence; and the absence of any other history such as gall stone colic or peptic ulcers plus the subsequent picture of the attack allow one to diagnose this condition as that of a mild pancreatitis.

Mrs. A., aged 48 years, who had previously had bilateral pyelonephrotomies, was seen at 8:30 P. M., 4-1-31. She gave a history of having occasional mild attacks of indigestion, with no definite regularity or relationship to meal time. This attack began with pain in the epigastrium, nausea and vomiting, violent back ache and considerable weakness—about 11 A. M. Patient not distended, pulse 130, temperature 100, and respiration 30, still having considerable epigastric pain and vomiting, very tender in epigastrium. White blood count 18,000, urine negative, abdominal examination otherwise negative. Presumably this patient had an acute pancreatic edema which was quite mild in character. A half grain of morphine was given, per hypo. The pain had entirely disappeared the next day but tenderness still persisted and was present to some degree on the 4th day following the acute attack. This patient was not operated on but further work will be done in regard to the biliary tract.

The various attempts to determine pancreatic function by estimating the ferments in its external secretion have not met with uniform success as marked variations have been recorded in apparently normal individuals and therefore the application of these functional tests in pancreatitis is not to be recommended.

The study of blood amylase with the viscosimeter applies a new principle and offers some real aid to the determination of pancreatic function with findings that have in many instances been verified at operation or autopsy. The determination of blood amylase is based on the rate of diminution of the viscosity of a starch solution as described by Elman and McCaughan[9] in 1927. The breaking down of starch to glucose being accompanied by the hydrolysis of larger to smaller molecules with a reduction of viscosity, an arbitrary amount of change is selected and the amount of amylase then becomes a function of the time required to effect the change.

In cases of acute pancreatitis there is an increase in amylase due to the digestion of the walls and of the ducts and an escape of ferments into the blood and surrounding tissues. In the chronic cases there is a decrease in amylase due to the atrophy of the acini. Graham and Associates[10] made a clinical study of this test recently and conclude that it has undoubted clinical value. This test warrants a much wider use and investigation in that it may provide a very great help in diagnosing the various types of pancreatic involvement.

Ordinary laboratory measures offer little aid in the diagnosis excepting there is quite constantly and early a fairly high leucocytosis present. Glycosuria is about as commonly absent.

Diagnosis. The hyperacute cases should offer little difficulty in diagnosis and as practically all of them die whether or not they are operated on, they will not be discussed here.

The milder types which are in a majority of instances accompanied by biliary disease often require considerable thought for their recognition. Sometimes no other diagnosis than that of an acute surgical abdomen is possible but this is not desirable particularly in some instances as will be brought out in the discussion of treatment. The abdominal signs are not proportionate to the symptoms. In acute cholecystitis the pain is quite often referred to the right shoulder blade, in pancreatitis it may occur to the right of the midline but very frequently is on the left side with a tendency to go straight through to the back. In many instances it will be possible

to localize the tenderness to the limits of the pancreas. The patient who has had an ulcer perforate in many instances assumes a position that is most comfortable and resents a suggested change of position. The individual who has a biliary colic or a kidney colic is usually writhing with pain while one who has an acute pancreatic involvement undoubtedly has the most agonizing pain of the three. He usually is not afraid to move and seems to be more quiet than the individual with the colic. The differentiation from high intestinal obstruction occasionally offers difficulty and it may occur as a part of the picture, but the localized tenderness in pancreatitis in contrast to the diffuse tenderness in intestinal obstruction with the marked reduction in blood chlorides may be of aid in distinguishing between the two.

Acute mesenteric thrombosis is usually accompanied promptly by the appearance of blood in the stools with a diffuse abdominal pain.

Treatment. Unless diffuse peritonitis or an abscess forms it is now held that surgery is best deferred until after a few days have elapsed or until the acute symptoms have subsided, for according to Eliason,[11] Mikkelson reports the recovery of 50 consecutive cases treated non-surgically or with a deferred surgical operation compared to a mortality of 66 per cent. following immediate operation.

If the pancreas contains gangrenous areas or abscess pockets they had best be drained through the gastra-colic ligament.

If the pancreas is swollen and edematous and there is much exudate and fat necrosis, drains down to the region of the pancreas constitute all the necessary surgery.

The question of drainage of the biliary ducts or gall bladder is always a serious problem and in general it is held that too much should not be attempted in this regard in the more acute cases. Drainage of the gall bladder is much more readily done than is drainage of the common duct but occasionally it will be necessary to drain the common duct because of obstruction of the cystic duct or because of a stone in the ampulla of Vater. It is advantageous to defer such a procedure if possible until the acute attack has somewhat subsided.

Removal of the gall bladder can hardly be justified during the acute process without drainage of the common duct, even though the cystic duct be occluded. Any drainage of the biliary passages that is established should be continued for a sufficiently long period to allow the pancreatic edema to subside. This may take many weeks rather than days.

In summarizing the problem of treatment it is difficult to see the validity of early operation, inasmuch as the patients die as a result of absorption from destroyed tissue and the extent of the destruction of tissue is probably quite early determined definitely and is fixed while later operations to open abscesses, remove sloughs and prevent bile from getting into the pancreas, certainly constitute good surgery.

CONCLUSIONS

1. Acute pancreatitis constitutes a condition which may vary in severity from that of an exceedingly rapidly fatal outcome to that of a much more common milder grade.

2. The diagnosis, especially with the newer blood amylase viscosity determination will become more frequent and accurate.

3. Biliary tract involvement is associated in a majority of cases.

4. Deferred surgical intervention probably offers the greater hope in the light of present knowledge.

5. Prophylactically, the surgical care of biliary tract involvement may lessen the incidence of acute pancreatitis.

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DISCUSSION

Dr. M. E. Brennan, East St. Louis: This is a very important subject because the pancreas is the most important digestive organ in the body and the most evasive.

Opie produced acute pancreatitis by injecting bile into the pancreatic duct. His bacteriological investigation convinced him that acute pancreatitis was probably not caused by infection. At autopsy he found acute pancreatitis caused by a stone in the ampule of Vater large enough to occlude the opening into the duodenum but small enough to allow the passage of bile into the pancreatic duct. From this he concluded that the etiology of acute pancreatitis was quite simple and that the cause of the disease is cholelithiasis.

Deaver admitted that acute pancreatitis could be produced by stones diverting the bile into the pancreatic duct but said that it seldom did. He attributed the cause to infection secondary to the bile tract, duodenum, and transverse colon particularly, but also to infections of the appendix, pelvic organs, or from even more remote infection through lymphatic extension and possibly from blood stream infections.

Opie's deductions were logical but Deaver was more nearly right. Regardless of the possible mode at least 65 or 70 per cent of the cases of acute pancreatitis are associated with biliary disease.

Acute pancreatitis was classified by Fitz as acute hemorrhagic, gangrenous and suppurative. This is a pathological classification and helps but little in clinical diagnosis. Deaver classified the disease as ultra acute, acute and subacute. This is a classification of degree of symptoms rather than differentiation of symptoms and gives little aid in clinical diagnosis.

Functional tests for the liver and kidneys have proven so fruitful in clinical diagnosis of diseases of these organs that many attempts have been made to elaborate functional tests for the pancreas. Most of these tests have been fruitless, however, it seems that recently some functional tests of value are being worked out.

Dr. Hopkins spoke to you of a functional test. At Barnes Hospital in St. Louis they have been working on a test that is reported by Dr. Graham as quite accurate. It is a determination of the amylase in the blood. I am not acquainted with the laboratory work and can not get a clear understanding of it from the description as given by Dr. Graham. If we are to be any more accurate in our clinical diagnosis it seems to me that it will have to be obtained by functional tests.

Preventing the disease by early attention to the biliary tract seems to be the most logical way to handle it. When acute pancreatitis exists it is a tragedy and must be handled by incision and free drainage just as we have been handling it for years. I know of no improvement upon the operative technic. When pancreatic secretion has free drainage it seems but slightly more irritating than bile. When it is confined it is very destructive.

Dr. J. H. Bacon, Peoria: I would like to speak of one of this type of case, following injury in a middle aged man. Pain followed immediately after the trauma which subsided so that he continued his work for the rest of the day, unable to work the next day and his symptoms gradually increased and became grave the fourth day, with rigid abdomen, vomiting and jaundice. On opening the abdomen, free bile was found, with gangrene of the tip of the gall bladder but it was not leaking. The entire common duct was gangrenous and was ruptured. Drainage of gall bladder instituted. He did well but had permanent biliary fistula. About four months later developed acute obstruction of the bowels and a gastro-enteostomy was done. Large hard mass in head of pancreas and dense adhesions. Six weeks later jaundice developed and bile flow stopped. Fistula explored under local anesthesia but no obstruction found. Death ensued shortly thereafter. At autopsy a large abscess was found in head of the pancreas and multiple abscesses in the liver. Might other treatment have changed the outcome?

ROENTGENOTHERAPY OF CONDITIONS OTHER THAN MALIGNANCY*

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CHICAGO

It must be said of the early workers in roentgenotherapy, that with the crude apparatus, unreliable x-ray tubes, various sorts of inefficient generating plants and little or no means of measuring the output of current, intensity of radiation or amount of absorption of the therapeutic agent, it is remarkable that so much was accomplished. We had to learn the dosage that was necessary to produce the desired effects by clinical experience, and apply that dosage by guess and by gosh. However, after the passage of a little more than thirty six years from the date of Röentgen's first paper, thanks to the intensive studies of highly trained physicists, electrical engineers and competent medical clinicians, all this has been changed. In fact we are now, with our standardized apparatus, efficient x-ray tubes, standard filters, calibrated measuring instruments, etc., able to measure our dosage and determine what we desire to apply as nearly as accurately as can the man who weighs his remedial agent or measures it in a graduate.

We have heard much of the treatment of malignant disease by means of the roentgen rays,

*Read before Section on Radiology of Illinois State Medical Society, May 7, 1931, at East St. Louis.

and not so much of non-malignant disease, so that when I was invited to present a paper here I decided to discuss roentgenotherapy of conditions other than malignancy.

Let us start with non-malignant uterine conditions. The application of the roentgen rays to benign disease of the female pelvic organs is not by any means new. As early as 1904 Foveau de Corvelles treated uterine fibroids by this method, while Longfeller in 1904, reported changes in the menstrual functions after roentgen treatment, and in 1909 Albers-Schönberg applied a definite and systemic technique to benign tumors of the uterus.

Because of the rapid strides that radiology has made during its short life and the large amount of definite and conclusive beneficial results in the large number of carefully reported cases, we have at this time no hesitancy in saying that practically all uncomplicated uterine fibromyomata should be treated and cured by roentgenotherapy. In a general way, the most favorable field for this therapy is in women over thirty-six years of age, whose fibromyomatous uteri do not extend above the umbilical line. The more uniform the uterine enlargement, the more favorable are they for this therapy. Interstitial fibroids usually give us the best results; but submucus, subserous and mixed types yield good results. Because the mixed type constitute the majority of cases, we see and consequently treat more of them.

While the literature is replete with explanations of what is accomplished in these cases, I will presume to briefly try and delineate some of my ideas of what is believed to be important to be known by all physicians, regarding how roentgenotherapy affects uterine fibroids.

First and foremost, hemorrhage, which is usually what brings these patients to us, and is the most important symptom in the submucus type, is promptly checked in over 95 per cent of all hemorrhagic cases. After the checking of the hemorrhage, the tumor usually begins to reduce in size, and the more myomatous tissue there is present the faster is this reduction while the more fibrous tissue there is present in the tumor, the slower will be the reduction in the size of the tumor.

It is a generally accepted belief that the entire results obtained are due to the action of the rays upon the ovaries; but this is far from being entirely proven. Dr. George Gelhorn of St. Louis,[1] in 1921, reported two cases contradicting this theory and I have three cases in my own practice, which go to disprove it.

Mrs. A. had a double salpingo-oöthectomy in 1917 when she was 33 years old. In 1920 she was referred to me with a large smooth fibromyomatous uterus, reaching to within three inches of her umbilicus. Roentgen treatments caused the uterus to recede behind the symphysis-pubes. Examination of this lady in December, 1928, showed that her uterus was but little larger than a well involuted multiparous uterus.

Mrs. B. had a double oöthectomy in 1916 at the age of 35. In 1921 at the age of 40, she had a fibromyomatous uterus reaching almost to the umbilicus. I treated her in the latter part of 1921 and early 1922, with prompt and most satisfactory reduction in the size of the tumor and uterus. I examined her in 1927 and found her uterus slightly larger than a normal multiparous uterus and she was enjoying splendid health.

Mrs. C. had a double salpingo-oöthectomy in 1915 at the age of 34 and stopped menstruating shortly thereafter. In 1924 she began having irregular hemorrhages. I was called in consultation to see her and made a diagnosis of uterine tumor. After a careful curettement and finding no evidence of malignancy, I recommended hysterectomy; but the patient positively refused to be operated on. This uterus was about the size of a large grape fruit and roentgenotherapy promptly reduced its size and stopped the hemorrhage. Examination in August of 1930 showed her uterus about normal in size and patient declared that she was in splendid health.

In these three cases, as well as the two cited by Gelhorn, the effect must have been upon the uteri and tumor tissue *entirely,* as in all five both ovaries had been removed and in my three cases menstruation had stopped before I saw them.

Further evidence that the results are not entirely due to the effect on the ovaries has been reported by others, from Finland and from Germany, regarding the increased coagulability of the blood, etc.

Men of world renown and high repute and standing have written so much upon this subject, that I will go no farther than to say that in our opinion, *roentgenotherapy is the treatment par excellence for uterine fibromyomata* unless it is contraindicated, because

1. It is safer for the patient than is surgery.
2. It is pleasanter for the patient than is surgery.
3. It is unnecessary for the patient to go to bed or to enter hospital.

1. Gelhorn, George, Journal A. M. A., Jan. 28, 1922.

4. It is unnecessary for patient to lose any time.

5. There is no surgical operation with its risks and fears.

6. There is no anesthesia with its risks and fears.

7. There is less postoperative morbidity.

8. There is no mortality.

9. The percentage of cures, in properly selected cases is as great as with any other method of therapy.

Uterine Hemorrhage. In uterine hemorrhage from any cause except inflammatory pelvic disease (and some well informed gynecologists of high standing do not now except inflammatory disease), roentgenotherapy should be the first remedy to be applied, if available.

The menopause need not be produced, if it is not desired, and if the patient is a young woman, only a short period of amenorrhoea—if any—need result. If the patient is near the climateric, the menopause will be brought on painlessly, gradually and with the minimum of discomfort for the patient. This is accomplished by masking off the ovaries so that they receive only the secondary radiation from the tube. Menorrhagia, metrorrhagia and the uterine hemorrhage of subinvolution yield splendid results to properly applied radiation, to the extent that all other methods of treatment should be withheld until roentgen methods fail.

Dysmenorrhea. There are so many women nowadays who suffer the tortures of the damned every twenty eight days, and there are so many questionable remedies for their relief, that some few venturesome radiologists, myself among the number, attempted to try radiation for the relief of this torture. From a small beginning, and by careful and steady advances, methods and technique have been developed whereby we may give such marked and gratifying relief in many of the most distressing cases. In women past the 30th year of life, in which the dysmenorrhea has been intractable and refractory and has resisted all other measures of relief, it has become our practice to apply enough radiation to produce relief even to the point of producing a complete amenorrhea, if necessary; and up to this time we have yet to regret this action. The satisfaction of being able to give relief to this incapacitating agony, stimulates us to continue this practice as long as we have no better means to suppress the pain. References to this subject in the literature are numerous, particularly during the last few years.

Much more might be said regarding the use of roentgenotherapy in gynecology, particularly in relation to overcoming Neisserian infection, but we must proceed and take up your time with a few minutes on an old time favorite subject of mine and yours too, namely

Thyrotoxicosis. I like the term thyrotoxicosis, because it includes the true exophthalmic goiter, and the overactive adenomatous thyroid.

Any physician who reads the medical literature at all has seen so much of this subject, that I venture that most all of you think of roentgenology whenever you see a toxic thyroid patient. If you do not, you should.

Roentgenotherapy has been used for nearly thirty-five years and those who have been using it for the numerous and various conditions and diseases and have learned how best to apply it, are getting as constant and consistent benefits and in as high a percentage of cases in thyrotoxicosis as is obtained with any other method of treatment.

In 1922 I presented a paper on this subject before this society, and at that time stated that "X-ray therapy is the treatment of choice for hyperthyroidism for the following reasons:

1. Because no harm can result and past experience proves that the method has cured and relieved a higher percentage of those treated than has any other and all other methods.

2. Because there is no operative risk.

3. Because there is no confinement in bed in ambulant cases.

4. Because there is no fear of operation by patient, family, friends or physician.

5. Because there is as great a likelihood of cure and as little likelihood of recurrence as there is by any other method of treatment; and if recurrence does occur, the same means and methods are available as before.

6. There is no scar on the neck or the mind of the patient.

7. The thymus can be treated at the same time. *This Is Important.*

With nine years of additional experience, I am glad to say that I have nothing to retract and considerable to add to these arguments.

My records of thyrotoxicosis cases treated up to September 1, 1930, are:

Number of patients treated	561
Number of patients clinically cured	390 or 69.52%
Number of patients clinically improved	126 or 22.46%
Number of patients rendered operable and operated on	20 or 3.56%
Number of patients unimproved	25 or 4.46%

Of the foregoing, there were 37 who had been operated on before I treated them, all of whom had definite thymus shadows, and all of whom were clinically cured by the radiation. Four of these had had two operations on the thyroid gland.

The oldest patient in my series of 561 cases treated was 68 years old and she is still alive after seven years. The youngest patient treated was ten. There were among these, three sisters, 20, 22, and 24 years old respectively.

The shortest period covered by the treatment to effect a clinical cure was 22 days (two series). The longest time consumed was 13 months, and the average time to affect a clinical cure in the 390 cases was three and one-half months.

Among the 561 cases were six (6) physicians —five of whom were clinically cured and one rendered operable and cured by the operation; eleven were physician's wives, all of whom were clinically cured; nine were physician's daughters —all clinically cured.

My conclusions from this series are that roentgenotherapy offers results that are equal to the best offered by any other method of treatment, even in the most expert hands.

The primary mortality is less than that of any other method of treatment, being none at all. The morbidity is far less than that of any other method.

Because of the lack of need of hospitalization in all ambulant cases with the consequent absence of hospital and nursing expenses, this method offers a decided economic saving over any other.

Thymus. Thymic hyperplasia, which so frequently accompanies thyrotoxicosis but which I have scarcely mentioned in discussing the foregoing subject, is acknowledgedly best treated by means of the roentgen rays.

In pathological enlargement of the thymus gland in infants and children no method yields as prompt and satisfactory results as the application of the roentgen rays.

At the last meeting of this Section, in Joliet, I had the priviledge of discussing a fine paper on this subject, which was presented by our good friend Wilbur H. Gilmore (published in the Illinois Medical Journal for August, 1930). At that time I said in part, "We should always be on the lookout for enlarged thymus in infants, particularly in those born prematurely and those apparently poorly nourished. * * * Slight enlargements frequently produce marked symptoms, etc, etc."

In addition to a considerable sized series of successfully treated cases of this condition in children, I have had forty-seven cases of enlarged thymus in adults to treat with roentgenotherapy, and in every case relief has resulted. Many of these had asthmatic symptoms while some had various other findings. Three of these came to me with a diagnosis of aortic aneurysms from roentgenograms made by physicians who were not experienced in interpreting the films and read them wrongly. Two of these were alleged to have been confirmed by fluoroscopic findings of expansile pulsation, but after the treatment showed no evidence of aneurism.

DERMATOLOGY

I could spend hours discussing the place roentgenotherapy has in the treatment of diseases of the skin without beginning to exhaust the subject. Because of lack of time I will merely mention a few of the most outstanding examples among the skin diseases benefited and cured by our therapy. George Miller MacKee, in his "X-Rays and Radium in the Treatment of Diseases of the Skin" enumerates more than eighty diseases of the skin in which the x-rays are beneficial.

Eczema, particularly of the indurated and more chronic forms yields splendid results and all modern writers on diseases of the skin mention the x-rays as the main and most valuable means of treatment.

Acne vulgaris if chronic and of long standing is usually much benefited by x-ray therapy.

Callouses and corns are quickly and surely cured and if the cause is removed do not recur.

Carbuncle when early recognized is frequently aborted, and if advanced, the pain is promptly relieved and softening, evacuation and healing are markedly hastened, while the resulting scars are decidedly less conspicuous in irradiated cases. I speak from personal experience in this.

Furunculosis is also favorably and satisfactorily influenced.

Blastomycosis and *Streptothricosis* and the various types of tineae yield quickly to roentgen radiation. A case of blastomycetic dermatitis of twenty years standing, that had been subjected to numerous and various methods of treatment by such celebrated clinicians as J. B. Murphy, Nicholas Senn, M. L. Harris, F. Rettig, E. E. Vaughan and others, was cleared up with a very few applications of the roentgen rays in 1921 and has remained well since.

Another case of the same condition which occurred in an eleven year old girl, had been present for over six years and had resisted the efforts of a dozen physicians, none of whom had thought of the x-rays of course, healed and disappeared after three applications of our most versatile remedy. A case under treatment at this time in a twelve year old girl has nearly healed after three applications. This has been on this child since early infancy.

Keloid is easily softened and caused to disappear in 95 per cent of all cases.

Hyperhydrosis and *Bromhydrosis* (the causes of the famous B. O.) can usually be cured to stay cured by a few applications of the x-rays.

Pruritis of the various anatomical locations, particularly of the anal and vulvar regions, yields most satisfactory results and gratifies both referring physicians and patients, by the comfort and ease produced in these often nearly frantic patients.

Leukoplakia, that forerunner of malignancy, can usually be caused to entirely disappear never to return by radiation.

Verucca or warts usually melt away quickly and *condylomata* of the vulvar and anal regions are usually easy to eradicate.

Naevi of the pigmented and hairy types are as a rule easily removed.

Lichen, Prurigo and similar conditions usually disappear after light applications of the x-rays.

Psoriasis, which gives us all so much trouble to eliminate has been successfully treated with roentgenotherapy. When persisted in and intelligently studied, this stubborn and tormenting disease yields enough cases apparently cured and markedly relieved to justify a thorough trial.

Lupus vulgaris, that wolf of diseases, while one of the stubbornest of all the diseases of the skin, generally yields better results under the x-rays than under any other therapeutic method. The last eleven cases under my care were completely cured, although some of them were of long standing.

In addition to the skin diseases named—which were given without reference to their classification, pathology or frequency, all skin conditions characterized by itching, induration and thickening, react well to the depressing and softening effects of the roentgen rays.

OPHTHALMOLOGY

There are several diseases of the eye which give definite indications for the employment of roentgenotherapy. Among these are:

Interstitial keratitis, which is a chronic disease of the cornea, with deposits which reduce the vision. This is frequently benefited by carefully applied radiation.

Trichiasis has been markedly helped by producing epilation of the eye-lashes. This is accomplished by carefully shielding the eye and treating through slotted lead fenestra, exposing only the region where the effect is desired.

Marginal blepharitis can be treated in a similar manner to the last named disease and frequently gives most pleasing results. It is a most intractible disease.

Excessive lachrimation can be reduced to any desired degree, by exposing the tear glands. The x-rays tend to dry up glandular secretion.

Vernal Conjunctivitis is another stubborn disease of the eyes that can frequently be relieved by application of the x-rays. Hubeny reported cases several years ago and I have had a few with satisfying end results.

Trachoma is being treated more and more in Europe by means of the x-rays. It is stated that many cases are cured and none are injured. The few that I have tried were cured.

OTOLARYNGOLOGY

Eustachian catarrh and *catarrhal deafness* are frequently much benefited by properly directed radiation.

Otosclerosis which is practically intractable by any other means, is occasionally much benefited. The roaring and tinnitis are helped in enough cases to justify a thorough trial in every case.

BONE AND JOINT DISEASES

Chronic osteomyelitis has been benefited in many instances by roentgenization.

Arthritis deformans has received much publicity and notice in the German and Austrian medical literature, as being markedly benefited by roentgenotherapy. A small series treated by me has given surprisingly good results in every case. The relief from pain is prompt and reduction of enlargements and resumption of joint function is startling. In some of the cases the resorption of deposits is sufficient to show in roentgenograms. These cases are always so distressing, that it is a real pleasure to give some relief and anything which promises some remission of the suffering is certainly to be welcomed.

Chronic sinovitis and *arthritis* offer conditions in which the roentgen rays with their pain relieving effect will be found most gratifying; the stiffness and enlargements of the joints are frequently so markedly reduced that we wonder if we may believe our senses. European and American medical writers report benefits in the various types of *acute* and *chronic polyarthritis.*

Tenosinovitis and *ganglion* may usually be completely absorbed by the application of roentgenotherapy.

Surgical tuberculosis of the bones and joints present some of the conditions in which we have most gratifying results. It is remarkable how sinuses close and heal, mineral salts are reposited in the decalcified bones, joints frequently resume their functions and other functional and physiological improvement is produced by roentgenization.

Ununited fractures—the so-called fibrous unions—may frequently be caused to take on calcium and heal, after the application of the x-rays. This is not in the nature of stimulation, as the *X-Rays Never Stimulate,* but the effect described has been repeatedly demonstrated.

GLAND CONDITIONS

Tuberculous adenitis stands out as one of the conditions most amenable to roentgenotherapy. Most intractable to ordinary therapeutic measures entailing long periods of invalidism, numerous and oft repeated dressings and usually terminating with ugly and defacing scars, roentgenotherapy with its minimization of all these, offers much that is desirable. If this treatment is begun before the glands have broken down and liquefaction, suppuration and mixed infection are not yet present, the gland tissue is soon atrophied and encapsulated. If the glands are draining and sinuses are present, healing and closure of the sinuses is accelerated and the end result is in many ways improved and enhanced.

In simple *inflammatory* or *infectious adenitis* a single application of the roentgen rays usually suffices to effect a cure.

TONSILS

The tonsil question, as regards roentgenotherapy, has stirred up considerable discussion, so that I hesitate to say much about it. I have several times publicly stated and still firmly believe that diseased tonsils should be removed whenever it is safe and practicable. If however for good and sufficient reasons operative removal is refused or undesirable, I undertake to treat them with the x-rays.

In my series of tonsil cases I have treated seven physicians, nine physicians' wives (four of whose husbands are doing tonsil surgery), nine physicians' children (two of whose fathers are otolaryngologists) and a considerable number of trained nurses and surgical technicians.

I believe that the results obtained in properly selected cases justify the method, except when abscess is present. When only a lymphoid enlargement is present, prompt reduction in size ensues.

UROLOGY

In *prostatic hypertrophy* where the glandular tissue predominates, the size of the gland may be markedly diminished and the consequent obstruction relieved, along with other urinary symptoms, thus rendering the always serious prostatectomy unnecessary, or at least postponing it for a time. Splendid results in properly selected cases are numerous in the records of nearly all experienced roentgenotherapists. I have had physician patients come for a thousand miles for treatment of their prostates.

Tuberculosis of the urinary bladder is always a serious condition, which fortunately, however, is not very common. A few cases have been treated with the roentgen rays with marked benefit and satisfaction to the patients and referring physicians, and we feel justified in recommending a trial in even the most serious cases with this disease. The great advantage of our treatment is that the irradiation may be applied to the entire urinary tract if desired, and to the deeper structures in and about the bladder and

ureters, as against the superficial effects of drugs and topical applications.

Papillomata of the bladder are affected much in the same was as are papillomata elsewhere and particularly if they are multiple. If I had that condition myself I would select x-ray therapy for myself.

NEUROLOGY

Neuritis of the various sorts and locations is given much relief by raying either the spinal roots and ganglia or the offending local region. I have used this upon my wife and myself, one application giving prompt and lasting relief within thirty hours in brachial neuritis.

Sciatic and occipital neuralgias are usually relieved quickly, while *intercostal neuralgia* has yielded to single applications in fourteen cases.

In *thromboangeitis obliterans* where the pain is so frequently of the most excruciating and tormenting character and the ulcers will not heal, we have seen prompt relief from the pain, healing of ulcers and apparent arrest of the process in five cases.

ASTHMA AND BRONCHITIS

As far back as April 23, 1906, Theodor Schilling reported, at the 23rd Congress of Internal Medicine in Munich, treating exudative bronchitis with severe asthma by roentgenotherapy with brilliant results.

In 1907 and 1908 Immelmann reported similarly at two medical meetings, while Bergman, Levy-Dorn, von Jaksh, Eckstein, Gottschalk, Groedel, Bolshakova and others in Europe and Gerber and others in this country have reported satisfactory results. It has been my privilege to have treated three physicians, all of whom have been greatly benefited. This method deserves more notice and application than it apparently receives.

UNRESOLVED PNEUMONIA

Records and reports as far back as 1905, by that master clinician, John H. Musser, along with numerous others of more recent date, strongly indicate the benefits resulting from x-ray treatment in unresolved pneumonia.

SUMMARY

I have purposely refrained from naming quite a large number of diseases and conditions where there is some questions as to the efficacy of the method and which I consider as clinical experiments. In many of these to me questionable conditions our European confreres are daily applying the roentgen rays and the medical literature is full of their papers and presentations. The medical literature from Germany, Austria, Hungary, Czecho-Slovakia, France, Italy, Scandinavia and Russia is replete with papers and entire volumes devoted to the methods of applying the roentgen rays in many diseases and conditions not named here.

While much of the foregoing is a mere scanning of the subject, because of its wide and varied possibilities and the multiplicities of the conditions and diseases mentioned, I am sure that you will realize that roentgenotherapy in non-malignant diseases has much to offer to the afflicted and to the physicians in whose care these patients are entrusted. I feel that I have reminded you that the roentgen rays are applicable to the treatment of a very wide range of pathological conditions.

But please do not presuppose from the foregoing that we claim to have a panacea for all human ills. It is far from our intention to try to convince you that we have a cure-all. Quite the contrary, we desire that you grant that we base our claims on logical, sound and sensible reasoning from cause to effect, and we are most anxious to have you give us the opportunity to prove it to you.

We claim and are prepared to prove three things in regard to roentgenotherapy in benign diseases, particularly those mentioned in this paper, and if you will grant these three things we will be satisfied. Our contention rests upon the following three points and upon them alone:

1. *The roentgen rays produce sedation, they depress pain, and reduce cellular activity and function.*

2. *The roentgen rays produce an endarteritis, particularly in the smaller blood vessels. They cause reduction in the circulation in the areas irradiated.*

3. *The roentgen rays soften horny cells.* They "decornify," if I may coin a new word.

Now then, if you grant that these three claims are true, and you will certainly do this, all you need is to apply them to the tissues involved and *all the curative effects in any of the lesions named in this paper will be explained.*

WARNING

I want to warn you that much more than a superficial knowledge of the roentgen rays is necessary to successfully apply roentgenotherapy.

Let me impress upon you in the most forcible manner that any person, in order to be able to properly apply roentgenotherapy in a safe and satisfactory manner, must first of all be a graduate in medicine, as the basic knowledge of anatomy, physiology and the allied branches of the medical sciences is absolutely necessary. I repeat, a knowledge of medicine is absolutely necessary, and this knowledge, combined with the skill acquired by long experience in the manipulation and administration of this remedy, is essential for the proper handling of this therapy.

The technique of the application of the roentgen rays in therapy is by no means as simple as some of the advertising sales talk of the apparatus manufacturers seem to try to convey; it requires as painstaking and extensive courses of training as is pursued in surgery or any other medical specialty before proper preparation and fitting for this work is complete.

Errors due to lack of knowledge or judgment in the application of the roentgen rays are as liable to produce as serious results as do the same lack of knowledge and judgment in the performance of a serious surgical operation. Accurate observation by a trained clinician who knows how, why and when to proceed, when and where to stop, continue or interrupt the treatment are as necessary in roentgenotherapy as these same qualifications are in any other branch of medicine, and only when these qualifications are possessed by the individual applying the remedial measure can the best results accrue.

The possession of x-ray apparatus does no more make the owner a roentgenologist than does the possession of a lot of brushes and tubes of paint make an artist, or a lot of knives, retractors, etc., make the possessor a surgeon.

None of you would for a momeent consider allowing anyone not a physician to prescribe a single dose of morphine, atropine or even less potent drugs, for fear of overdosing. *I want to warn you that, while for morphine and atropine we have sure acting antidotes, there is no antidote for an overdose of the roentgen rays.*

I fear that this has been a long winded discussion; but I feel that its length was in a measure justified in order to give you a proper idea of "Roentgenotherapy of Conditions Other Than Malignancy."

25 E. Washington St.

FIBRO-SARCOMA OF ORBIT: KRÖNLEIN OPERATION. REPORT OF A CASE*

O. D. CUNNINGHAM, M. D., M. S.
ROCKFORD, ILLINOIS

The literature abounds with reports of retrobulbar tumors. The operative approach for biopsy or removal appears to be quite variable, depending upon the apparent accessibility of the tumor. The perplexing problem, once a diagnosis of malignancy is made, is whether one may ever safely stop short of exenteration of the orbit.

This patient, R. H., was a 17-year-old boy of Swedish parentage. He consulted us, April 29, 1929, because of swelling and discomfort in the left upper lid that had been coming on during the previous two weeks. Both lids, but especially the left, had shown intermittent swelling lasting two or three days at a time. The left eye had gradually become somewhat prominent. The boy stated that from the first he frequently had sharp twinges of pain in it and considerable aching on seeing a moving picture. He had noticed visual impairment in the left eye, particularly for the printed page, and had found it helpful to cover that eye while reading. He thought the electric lights were failing on several occasions at home; his father, however, assured him that they were as bright as usual. From the first he had experienced a little difficulty on looking toward the left. There was no history of eye injury.

His general health had been good and he had noticed no weight loss. He had worked in his father's grocery store since leaving school at the 8th grade.

Examination revealed a prominence of the left eye with some edema of the left upper lid. There was some edema and vascular congestion of the conjunctiva and subconjunctival tissues temporally, especially above the level of the external canthus. There was no tenderness, bruit, pulsation or fluctuation, nor could the swelling be reduced by pressure. Transillumination was clear. There was limitation of extreme abduction of the left eye, but no diplopia at that time. There was a manifest left hypophoria, however, of 2°, and an esophoria of 3°.

The tension was normal, the ciliary body not tender. The media were clear and the pupillary reactions normal. The fundi were normal except that in the left there were undue shimmering light reflexes and a slight vascular congestion.

The vision in the right eye was 6/4-2, in the left 6/15.

*Read before Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, May 5, 1931, at East St. Louis.

Under scopolamine cycloplegia the V. O. S. was improved to 6/7.5-5 by plus .75 plus 1.25 axis 65°. The compound hyperopic astigmatism was presumably due to posterior and supralateral pressure.

Study of the fields revealed a concentric peripheral suppression in the left for both form and color, with inferior segmentation for blue and red and a central

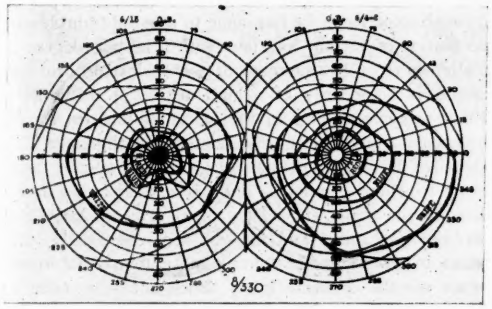

Fig. 1. Pre-operative perimetric fields, showing, in the left, concentric peripheral suppression for form and color, inferior segmentation for blue and red and central scotoma for blue. Outermost line represents normal for white. Edematous lids not retracted, 8/330.

scotoma for blue. (Fig. 1). Interpretation of these findings seemed most plausible on the basis of impaired retinal nutrition from venous congestion or possibly direct pressure. Relative central blue-blindness is said to be characteristic of disturbance of the outer retinal layers; for this reason and the fact that the choroidal congestion was apparently much more intense than the retinal, it was felt that greater damage had been done to the outer, photo-chemical layers than to the inner conduction apparatus.

There was no clinical or x-ray evidence of paranasal sinus disease.

The parents were told that a retro-bulbar neoplasm was suspected and the boy was referred for further diagnostic study.

The general physical and laboratory findings were negative except for x-ray evidence of bilateral fibroid infiltration of the left chest to the 4th rib and of the right chest to the 2nd interspace. In the absence of further evidence it was considered a case of arrested pulmonary tuberculosis.* The blood picture was normal, including a white cell count of 9,000. Two Kahn tests were negative.

Stereoscopic and flat-plate examination of the skull revealed the entire left orbital area to be slightly opaque. The greater part of this opacity was considered due to edema and the protrusion of the eye-ball. There was no evidence of a bone lesion or definite evidence of a retro-bulbar mass.

*Ten months later the patient was re-admitted to the Rockford Municipal Sanitorium for further study. Over a period of five weeks his temperature and pulse readings were normal. X-ray pictures showed no change in lung pathology and sedimentation tests gave no evidence of destructive pathology.

During the two weeks of study and observation the pain was no worse. However, the proptosis advanced steadily to approximately 15 mm. Edema of both upper lids became constant. (Fig. 2, left.) The vascular dilatation and edema of the left conjunctiva and subconjunctival tissues became intense temporally. Diplopia developed and was shown in the diplopia field to be due primarily to a failure of left-sided abduction.

While an orbital tuberculoma seemed a remote possibility, a tentative diagnosis of retro-bulbar neoplasm, probably fibro-sarcoma, was made and exploration advised May 18th. Five days later the advice was accepted and the Krönlein operation done under ethylene anesthesia.

The incision was in the form of a rather sharp arch with its convexity forward and overlying the outer rim of the orbit. Its upper limb extended to a point 1 cm above and 2 cms posterior to the external limit of the eye-brow, the lower limb to a point over the zygoma about midway between the external canthus and the tragus. After the soft parts down to the temporal fascia were retracted, a periosteal incision was made vertically along the outer rim of the orbit and 1 cm posteriorally along the zygoma. Then the periosteum of the outer orbital wall was elevated until the spheno-maxillary or inferior orbital fissure was reached. The temporal muscle and underlying periosteum were not elevated except along the two lines of bone section. The lower bone section was made from the origin of the frontal process of the zygoma backward and inward to the anterior end of the spheno-maxillary fissure. The upper was made from a point just above the zygomatic-frontalis suture downward, backward and inward

Fig. 2. (Left): Pre-operative appearance, showing proptosis O.S. and edema both upper lids, V.O.S. 6/15. (Right): Appearance 18 months post-operative. Ptosis and slight proptosis O.S.

to a point in the spheno-maxillary fissure 1 cm posteromedial to its anterior limit. Section was made for the most part by Gigli and hand saws; a fine chisel was cautiously used at one difficult place.

On reflecting the bone flap posteriorly we found its periosteum involved by a hard, disc-shaped, well-

limited tumor mass about 2.5 cm across and 1 cm thick. The tumor was in the orbital fat just outside the muscle cone and followed the contour of the bulb over its supralateral aspect where it apparently involved the lachrymal gland.

All palpable and visible tumor tissue, including a portion of the lachrymal gland was removed by dissection. The wound was closed with a small rubber tube draining the orbit. Post-operative healing was uneventful except that a ptosis of the left upper lid remained.

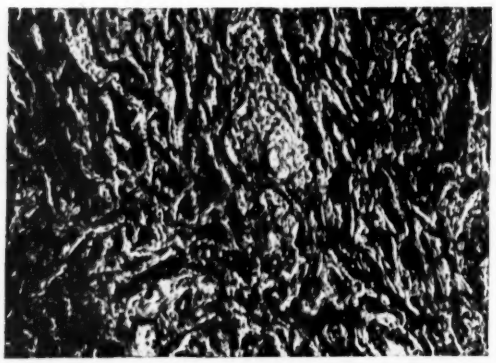

Fig. 3. Histology of the neoplasm from the orbit (x100). Phosphotungstic acidhematoxylin stain. Note large amount of inter-cellular substance.

Dr. H. D. Palmer, pathologist at Rockford Hospital, has kindly contributed the following report and explanatory discussion:

"Gross description: The specimen is tissue removed from the orbit. It is white dense tissue in one oval-shaped mass 1.4 x 1 x 0.8 cms. The surface is quite smooth. The cut surface remains flat and the edges quite angular. The cut surface has a fibrillar appearance.

Microscopic description: The section stained with hematoxylin and eosin presents a tissue made up largely of intercellular substance in the interstices of which there are spindle cells; a few of these cells present hyperchromatic nuclei. Mitoses are seen but they are infrequent. An occasional inflammatory cell, especially the eosinophile, is seen through the tissue. Fat is being replaced at the periphery. Phosphotungstic acid-hematoxylin stains show the spindle-shaped cells embedded in a large amount of collogen. Fibroglia fibres are quite numerous. (Fig. 3.) One of the sections shows a portion of the lachrymal gland in juxtaposition to the neoplasm. It is involved in a chronic inflammatory process.

"Fibro-Sarcoma is a malignant neoplasm, the type cell of which is the fibroblast. This cell is recognized in neoplastic tissue by its production of fibroglia and collogen fibres, having first been suggested by its usual spindle shape. Pure fibroblastic tumors arise in almost any part of the body and usually exhibit some degree of malignancy. With the exception of fibroma of the ovary and neurofibromata of the skin there are no *common*, benign, purely fibroblastic, neoplasms. It is a good rule, therefore, to consider every purely fibroblastic neoplasm arising in places other than the skin or the ovary, at least, as potentially malignant. The pathologist is, however, with at least a fair degree of success, able to recognize different degrees of malignancy and, through experience, he has come to associate fibroblastic neoplasms of certain locations with a certain degree of malignancy. Fibro-sarcoma of the periosteum, for example, is notoriously of a high degree of malignancy. Fibro-sarcoma arising in the fascia of muscles is, notoriously, a neoplasm of low degree of malignancy. The so-called desmoid tumor of the rectus abdominalis fascia is an excellent example. They arise also in the fascia lata, in the scalp, etc. They often grow to large size without metastases and may be removed locally after years of growth with nothing more than local recurrence months or years later. Such a case is cited by Kaufmann.* Grossly such neoplasms are well outlined; growth is more central than peripheral; and there is usually marked differentiation, with a large amount of collogen. There are few mitoses or tumor giant cells, if any. Slowly developing anemia and general signs of malignancy are present.

It is seen, then, that the mere fact that the name fibro-sarcoma is given to a neoplasm is no reason to consider it necessarily a neoplasm of high degree of malignancy. The above picture is not to be considered of the same degree of malignancy as a fibro-sarcoma growing by peripheral invasion and destruction of normal tissue and made up of pleomorphic cells with hyperchromatic nuclei, mitoses, tumor giant cells, and very little collogen or fibroglia. The latter has all the criteria of malignancy. The former has many of the criteria of benignity.

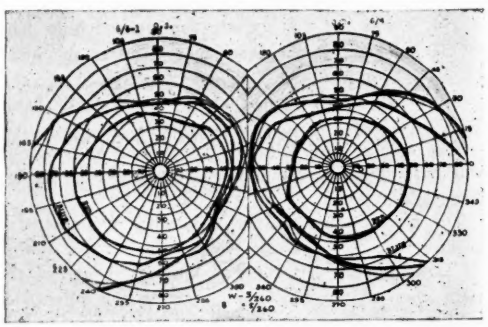

Fig. 4. Normal perimetric fields for white (outermost) and color 18 months post-operative. White 3/260. Color 5/260.

It is also to be thoroughly understood that degree of malignancy is controlled by many factors which are entirely unknown. The best we can do is to estimate.

*Kaufmann's Pathology—Blakiston.

The estimate in this particular group is based largely on 1. delimitation or so-called encapsulation of the mass which is interpreted as meaning lack of invasive tendency, 2. microscopic differentiation of the type cell with large amount of intercellular substance and 3. the experience of the person analyzing the situation."

With the report of fibro-sarcoma, our first thought was to exenterate the orbit. However, the tumor was apparently localized, and was, we were told, a type not early to metastasize nor especially prone to recur. If metastasis had already occurred, it was felt this would be beyond the orbit. Exenteration then, could offer but little more than radiation. After consulting with Dr. Palmer we elected to conserve the eye-ball.

One month after operation Dr. Ackemann instituted a course of Roentgen-ray therapy described as follows:

The patient was given one skin unit on the following dates and each directed through the orbital area in the anterior posterior and lateral directions, the latter from the left side:

June 20, 1929
July 20, 1929
Sept. 19, 1929
Nov. 11, 1929
Jan. 22, 1930
Mar. 25, 1930

The following factors were used: One hundred and fifty peak kilovolts, six millimeters of aluminum, sixteen inches distance, five milliamperes, for twenty-four minutes.

The post-operative course has been fortunate to date with no symptoms or signs of tumor recurrence. Recovery of visual acuity was fairly prompt and has been progressive. The refractive error under scopolamine cycloplegia is:

O. D. plus .75 plus .50 axis 105°
O. S. plus 1.00 plus 2.25 axis 96°

and the corrected V.O.D. is 6/4, V.O.S. 6/6-1. The fields are now normal for both form and color. (Fig. 4.) A slight left exophthalmus remains constant. (Fig. 2, right.) There is limitation of extreme abduction and adduction, due, presumably, to cicatricial involvement of the external rectus. The lachrymation of the left eye seems to be rather deficient, but not to the extent of causing trouble. The ptosis has persisted. It was quite unlooked-for, but in restrospect would seem to have been caused by operative trauma to the levator. The patient does not wish an operative attempt at correction.

COMMENT

The Krönlein approach served very well in this instance.

No one may pronounce a cure from sarcoma as early as two years after operation. If, however, one may begin to think of cure that early, it would appear that in this case of relatively less malignant fibro-sarcoma of fascial origin we were justified in conserving the grossly uninvolved orbital structures and trusting to radiation to destroy any remaining tumor cells.

Without the close co-operation of the pathologist we would have sacrificed the eye.

Grateful acknowldegment is made to my senior associate, Dr. L. A. Shultz, Dr. H. D. Palmer, Dr. Justin Steurer, Dr. H. W. Ackemann, radiologist, and Dr. Robinson Bosworth, Superintendent and Medical Director Rockford Municipal Sanitorium, for their counsel and co-operation.

DISCUSSION

Dr. George F. Suker, Chicago: Dr. Cunningham is to be congratulated upon this clear presentation of the question. He has certainly given a very detailed explanation. It opens a large field. Fibrosarcoma is one type of tumor that is likely to be encapsulated, and these have less tendency to general metastasis than other types. The fibrosarcoma arising in the orbit primarily is of the nature of an epulis. It is a local type and metastasis occurs very seldom. The fibrosarcoma that is entirely encapsulated and does not involve the periosteum itself is of local malignancy.

I wish to make one suggestion in regard to the term exophthalmos and prophthalmos. I do not think we should use exophthalmos when we have a protrusion of the globe by the intraorbital contents. In exophthalmos the rotations of the globe are not restricted, but a tumor so often involving some of the muscles we have a limitation of rotations. Therefore I suggest in speaking of intraorbital tumors we use the word proptosis instead of exophthalmos.

I also wish to compliment the essayist on the idea of taking fields of vision in any suspected case of orbital tumor, particularly those at the apex. The fields are prone to be limited because of pressure. You will not have a normal field nor normal fusion. The fields may be of the hemianopic or concentric type. These tumors do involve the circulation by constriction and you are bound to have more or less manifestation of this in the retina, as Dr. Cunningham mentioned. I would not suggest the excessive use of radium or x-ray for after treatment when a useful eye has been retained. It may not occur forthwith, but months later the patient might develop an optic atrophy, cataract or severe corneal lesions.

The question of diagnosis of intraorbital tumors is

always more or less problematical. You cannot say definitely that it is a glioma, sarcoma, carcinoma, osteoma, fibroma or what not. You are never sure in any tumor that it has not begun to infiltrate. It is not always necessary to sacrifice the lids and leave an ugly socket. You are usually perfectly safe in leaving the lids and a large part of the conjunctiva and anterior orbital tissue, and thereby secure a relatively efficient cul de sac for a prothesis.

There are several points about the Krönlein operation which Dr. Cunningham probably has in mind; it is a nice operation, but unless done carefully the end results are apt not to be very cosmetic. I prefer a circular dental saw instead of a chisel. You sacrifice little bone and secure a better restoration of the outer wall of the orbit. Then too, for the exenteration, use the electric cautery or radium knife, so as to have as little bleeding as possible; thorough cauterization has a curative value. This should be followed by intensive x-ray treatment for four or five days, then a series of x-rays at intervals of six weeks or longer.

Dr. O. D. Cunningham, Rockford (closing): I am grateful to Dr. Suker for his enlightening remarks. If this paper has any value it is by way of emphasizing the need of cooperation between the ophthalmologist and pathologist in diagnosing these cases and in making decisions as to further treatment, once the diagnosis is made. The clinician can observe rapidity of growth and operative findings, but the pathologist should be the one to pass upon the tissue grossly and microscopically and determine whether it is embryonic and rapidly growing and therefore more dangerous; whether the encapsulation is complete, and whether there is a probability of infiltration of surrounding tissues.

THE MAGGOT TREATMENT OF OSTEOMYELITIS*

JACOB MYERS, M. D., F. A. C. S.
AND
LEO M. CZAJA, M. D., F. A. C. S.
CHICAGO

The maggot treatment of Wm. S. Baer[1] for osteomyelitis is advocated as an economical, efficient form of therapy which produces healing without draining sinuses in the shortest length of time, with the quickest return of function and the least retraction of the scar of any treatment in use at the present time.

As evidence of the inadequacy of other methods of treatment we offer a few statistics gathered from the literature. Dean Lewis[2] in a study of 229 cases, found that fifty per cent. of all cases were discharged as improved, but with sinuses and unhealed wounds, which required multiple operations for recurring attacks and abscesses. Forty-nine cases were cured, six were not improved, twelve died, and 64.5% were complicated with one or more joints involved.

W. H. Ogilvie[3] in a study of 51 cases at Guy's Hospital for 1922 to 1926 states that 21% died, 51% were discharged with healing wounds, 16% were discharged with wounds all healed, 8% had amputations, 2% were transferred to another hospital and 2% were sent to an infirmary.

The object of the surgeon in the treatment of this condition since its original description by Lannelonge in 1879, has been to remove the necrotic bone and to rid the bone of micro-organisms by the establishment of adequate drainage and the application of antiseptics. These conditions were thought to be necessary for the regeneration of bone and the re-establishment of health. This has been impossible of accomplishment by previous surgical measures because of the structure of bone tissue.

Orr,[4] in his method of treatment advises the avoidance of antiseptics and chemical irritants and recommends adequate drainage, immobilization and rest in correct anatomic positions. The method of Baer uses the viable antiseptic properties of the maggots which operate without irritation and without interfering in any way with Nature's healing process.

PATHOLOGY AND PATHOGENESIS

Bacteriology. The infecting organism is usually the staphylococcus aureus, although the infection may be due to streptococcus, pneumococcus staphylococcus albus, typhoid bacilli, or other organisms. These are usually brought to the bone via the blood stream. The metastasis occurs from a lesion of the skin, tonsils, middle ear or other focus of infection. Direct infection may occur in penetrating wounds such as compound fractures, gun shot or stab wounds. Very rarely there may be a direct extension from infection of the contiguous soft tissues.

Relationship of Anatomical Structure to Pathology. The nutrient artery enters the bone through the nutrient canal near the middle of the shaft. It is distributed throughout the medullary canal and to the deeper portions of the surrounding cortex. These arteries are directed toward the elbows and from the knees except in

*Read at Annual Meeting of Illinois State Medical Society, Section on Surgery, at East St. Louis, May 6, 1931.

the fibulae. The epiphyses toward which they are directed ossify earliest.

The metaphyseal arteries entering through the cortex supply the spongy bone of the juxta-epiphyseal region and the deeper parts of the overlying cortex. After ossification of the epiphyses

Fig. 1. (Case A. O.) Lower end of right femur showing sequestrum and large perforation of the bone. There is also a disalignment of the shaft resulting from a previous pathological fracture following operation. Recurring lesions have existed for twenty-four years. Three sinuses were draining at the time of operation.

Fig. 2. (Case A. O.) Bone regeneration present six months after operation and implantation of maggots.

the metaphyseal group of arteries lose importance and unite with the branches from the nutrient artery. There is a small area of bone between the diaphysis and the metaphysis which has a lessened quantity of blood supply. Some authors think this is a determining factor in the localization of the infection in this area.

The periosteal vessels supply the superficial layers of the diaphyseal cortex. They pass from the periosteum into the Haversian canals. In the deeper portions of the cortex they anastomose with small branches from the nutrient artery.

Significance of the Epiphyseal Cartilage and Contiguous Areas. Lexer[5] has shown that the metaphyseal arteries terminate in loops where the blood current is slowed. This area offers a favorable pabulum for bacterial emboli which become arrested here. The avascular part, separating the diaphysis from the metaphysis forms a real barrier against the spread of infection into the diaphysis by direct continuity.

The epiphyseal cartilage is firmly adherent to the surrounding periosteum at its surface. This offers a very efficient protection against direct invasion of the joint. After ossification of the epiphyseal cartilage, localization in the metaphysis is not so common. In adults the original focus may start in any part of the diaphysis as well as near the ends of the long bones.

The role of the Periosteum. Periosteum is a fibrous tissue membrane. It contains the blood vessels which pass from it directly into the bone through the Haversian canals. The nutrient artery also penetrates it. Some connective tissue fibers accompany the vessels passing into the Haversian canals. These are the fibers of Sharpey. Stripping of the periosteum interferes with the circulation of the superficial layers of the bone. Infection under the periosteum readily

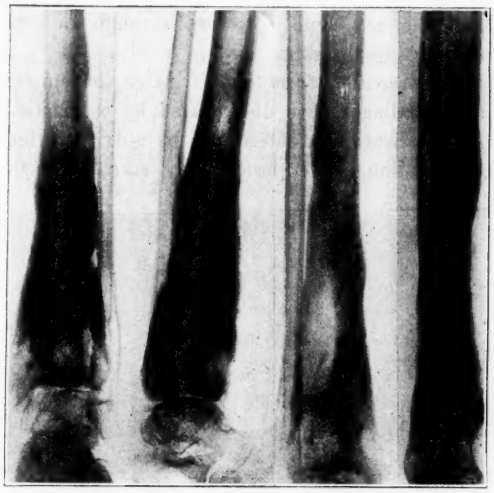

Fig. 3. (Case E. J.) Osteomyelitis and large sequestrum involving lower end of left tibia. The disease was of two years duration. Patient had two previous operations.

Fig. 4. (Case E. J.) Lower end of left tibia two months after sequestrectomy and eight maggot implantations showing considerable regeneration.

extends along the blood vessels and the fibers of Sharpey whereby it may gain entrance into the medullary canal.

Reaction of the Bone Marrow to Infection. The bone marrow is a parasitic mass of lymphoid tissue occupying the medullary canal and the

inter-trabecular spaces of the spongy or cancellous bone. When it becomes infected it responds with typical reactions of inflammation tending toward abscess formation.

Metaphyseal Osteomyelitis. The present understanding of this condition is the result of the work of Clarence Starr[6] published in 1922. The initial lesion in hematogenous osteomyelitis of growing long bones occurs at the juxta-epiphyseal region of the metaphysis. It begins as an inflammatory lesion of the marrow in this area. By direct spreading it reaches the surface of the bone. The pus forms under the periosteum and strips it from the bone. As the infection extends into the Haversian canals it finally reaches the medullary cavity and involves the marrow inhabiting it. Thus the medullary cavity becomes involved by retrograde extension from the surface and not by direct invasion through the metaphysis. When the periosteum becomes penetrated, the surrounding soft tissues are involved and the pus finally escapes through necrotic openings in the skin.

Diaphyseal Osteomyelitis. After the epiphyseal cartilages have disappeared by ossification, the localization is determined by nutrient artery distribution. The lesion may start near the middle of the shaft or at one end. It spreads along the cancellous tissue lining the deep surface of the cortex, or directly along the marrow. It may extend from the middle towards the ends or from one end through the shaft to the other end. In old bones there is less tendency to spread. An attempt at walling off is more apparent with the formation of localized abscesses surrounded by sclerotic bone. If the infection reaches the surface it usually penetrates the periosteum without stripping because it is firmly adherent. The periosteum may become perforated allowing pus to escape into the surrounding tissues forming migrating abscesses which form sinuses and discharge through the skin.

Fig. 5. (Case E. J.) Before operation. Discharging sinuses above ankle.

Fig. 6. (Case E. J.) Wound extending directly into tibia three weeks after operation. Granulations are well shown after second implantation of maggots.

Fig. 7. (Case E. J.) Wound completely filled with granulations ten weeks after operation.

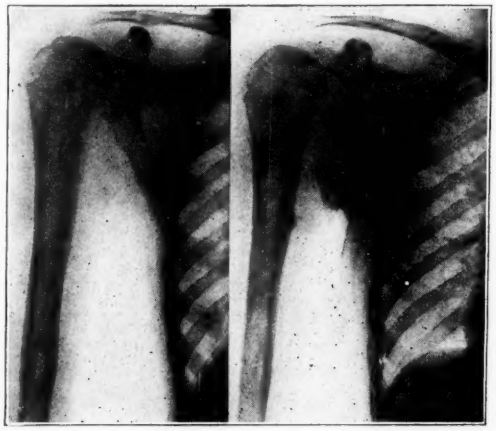

Fig. 8. (Case J. B.) Osteomyelitis of the upper third of left humerus showing sinus in upper portion and small sequestrum in middle portion.

Fig. 9. (Case J. B.) Nine weeks after operation. The small sequestrum has disappeared spontaneously. The upper portion shows considerable bone regeneration. Patient had six implantations of maggots.

Histopathology. The infected area of the metaphysis presents small purulent foci in the bone marrow. It begins with hyperemia, exudation and small hemorrhages into the marrow resulting in necrosis. These minute areas coalesce to form small abscesses. The bone trabeculae become absorbed and break down. Thus by extension of the process towards the surface, pus collects under the periosteum near the epiphysis. The increased pressure under the periosteum loosens it from the shaft of the diaphysis. Then coagulation and hemolysis occur in the capillaries of the Haversian canals of the cortex. This results in necrosis of the shaft reaching to the medullary canal. The central bone marrow becomes necrotic by the same process. Dead and dying bone cells, bacteria, large mononuclear and polymorphonuclear leucocytes are plentiful in the necrotic areas. Thus by being deprived of

blood supply, large portions of bone become necrotic.

THE PROCESS OF HEALING AND REPAIR

Involucrum Formation. The under surface of the periosteum gives rise to budding capillaries surrounded by young connective tissue cells. This embryonal connective tissue projects toward the bone surface and gradually fills in the space between the stripped periosteum and the bone. The fibroblasts of this embryonal connective tissue assume the role of bone cells by a process of metaplasia.[8] The contact of the young capillaries with the necrotic bone produces resorption of its calcium and phosphorus salts. This results in a localized surcharge of calcium and phosphate in the fluid media. As the bone cells prepare the area for solidification, changes occur in the character of the media. These changes progress until the area produces a shell of cancellous bone about the old necrotic area. As the process proceeds the bacteria and leucocytes tend to disappear. When they remain, the involucrum is imperfectly formed. The necrotic areas in the periosteum remain as openings or cloacae in the involucrum.

Fig. 10. (Case J. B.) Lower end of left tibia showing necrotic bone and cloacae.

Fig. 11. (Case J. B.) Lower end of left tibia showing bone regeneration after operation and six implantations of maggots.

Sequestration. The live bone area contiguous to the necrotic bone becomes hyperemic. Budding capillaries and embryonal connective tissue spring from the living bone and grow toward the dead bone. Resorption of the calcium salts occurs until the necrotic bone is entirely separated from the living bone by granulation tissue which may contain considerable pus.

The shape of the sequestrum is pyramidal with its base at the epiphyseal end and its apex at the point of contact between the periosteum and bone.[6] The sequestrum thus formed is a foreign body which must be removed. The capillaries continue to grow into its spaces carrying with them new granulations. Thus it is slowly resorbed and broken down. This process is slow, and has a tendency to perpetuate the diseased condition, because the bacteria in the necrotic bone are protected against the natural defensive mechanism of the blood, which no longer circulates through the sequestrum. The only points of attack are on the surface and the spaces into which the capillaries may grow from the surrounding living tissue. The pus formed by the chronic infecting disturbance is discharged through the involucral cloacae which open into the sinuses between them and the skin.

GENERAL PATHOLOGICAL CONSIDERATIONS

At some time in the disease the infecting organism appears in the blood stream. After localization in the bone the growth of the bacteria may be rapid or much delayed. The toxin formed here may sensitize the individual or produce a condition of allergy which deprives his blood of defensive qualities. After this occurs the development of the bacteria in the blood becomes rapid and the patient may die of toxemia regardless of whether the periosteum is incised or the bone opened. The clinical picture of toxemia does not correspond to the anatomical picture. These are the fulminating cases that do not respond to surgery as described by Looser.[9]

Healing after Removal of Sequestrae. An operation for sequestrectomy leaves a large opening through the involucrum. The cavity in the tubular involucrum has a wall of rigid, spongy bone. At its upper and lower ends where the sequestrum has become detached, there remain areas of devitalized bone, which have not separated. Just beyond this area portions of the spongy bone or the Haversian canals of the compact bone still harbor the infecting organisms. Small necrotic areas, or isolated abscesses, not visible at the time of operation may nevertheless exist. The granulation tissue adherent to

the wall and surrounding the sequestrum also contains the bacterial invader. (Figs. 1 and 2 A. O.)

The method of nature is to fill the cavity with new connective tissue originating from the connective tissue of the live bone and periosteum. This tissue gradually extends over the interior surface of the involucrum from its edges where the periosteum covers it, and from the parts of the bone forming the ends of the cavity. By gradually piling up this granulation tissue the cavity becomes filled. The new connective tissue is embryonal in type. By a process of metaplasia it can result in fibrous connective tissue (scar tissue), cartilage or bone. If the dead bone is all removed and the bacteria disappear, the end result will be bone. However, owing to the impossibility of destroying the bacteria, healthy bone is not often formed. In a single case all three types of connective tissue may be present at the same time.[10] This shows the presence of some influence which is retarding bone formation. Large numbers of polymorphonuclear leucocytes (phagocytes) and bacteria inhibit bone formation. As the new bone is formed, it becomes infected, dies and forms sequestra. Thus the process becomes continuous, with a constant attempt to extrude dead fragments of bone, and to replace them with connective tissue, which by metaplasia may restore the bony defect.

Sometimes the stimulative action of the toxin and sequestra result in dense sclerotic bone formation about the cavity. This hard bone has little tendency to form new granulation tissue. Thus the cavity may remain indefinitely, containing pus or a gelatinous fluid with no tendency to further destruction. (Figs. 3, 4, 5, 6, 7, E. J.)

DIAGNOSIS

Acute Hematogenous Osteomyelitis. The onset is sudden, with fever and intense pain which is constant and predominant at the site of the lesion in the affected bone. There is a corresponding finger-tip area of tenderness on pressure over the site of the lesion. In a short time swelling appears over the affected area. When the lesion extends to the periosteum, redness, edema and induration of the overlying skin occurs.

Chronic Osteomyelitis. The diagnosis is made on the history of an acute onset followed by the formation of abscesses, discharging sinuses and sequestra. The roentgenogram discloses the exact condition of the bone. When the condition is due to injury, the diagnosis is obvious and the roentgenogram confirms the diagnosis.

DIFFICULTIES TO BE OVERCOME

1. Drainage

a. Adequate drainage in bone tissue is well nigh impossible on account of the rigid tissue and small enclosed bone spaces.

b. A large amount of living tissue must be sacrificed to secure drainage by operation.

c. The operation spreads the infection into non-infected areas.

d. Necrotic bone or sequestra, harbor infection indefinitely because they are isolated from the protective influence of the circulating fluids.

e. Sinus formation perpetuates infection in the soft tissues.

2. Sequestrectomy.

a. Removes much viable bone to expose the sequestrum.

b. Often live bone cannot be differentiated from dead or dying bone, hence sequestra continue to form after the operation.

3. Resistance to infection

a. Chronic retention of infection sensitizes the individual and reduces his bactericidal ability. (Figs. 8, 9, 10, 11, J. B.)

TREATMENT

Why have old methods failed?

There are over 10,000 unhealed cases of osteomyelitis in the United States. All of these are in a state of invalidism. They have all had some kind of surgical treatment. This treatment has failed to cure. An average of 60% of cases of acute osteomyelitis are dismissed from hospitals as improved. This means with discharging and unhealed wounds.

The great diversity of opinion as to the proper surgical handling of acute osteomyelitis bespeaks its difficulty of cure. The obstacles to be overcome are generally well understood, but no adequate means has heretofore presented itself.

The general tendency has been to establish drainage by removal of more or less of the bone and then to annihilate the bacteria by the application of various chemicals in solution. This includes all the methods of drainage with or

without tubes or other forms of drain; irrigations, as in the Carrel-Dakin method, and the application of packs, saturated with the chemical solutions. It was hoped that the antiseptic solutions would somehow reach all the micro-organisms and cause the wound to become aseptic. This actually happens in some of the cases treated by the Carrel-Dakin method. These however, are included in the 40% of cases which get well and are not under discussion. This condition of asepsis follows in too small a percentage of cases to make the treatment a standard one.

The fact remains that owing to the non-collapsible walls of the bone spaces in the cancellous portions and of the Haversian canals of the compact bone, viable micro-organisms become so isolated that they are never reached by the antiseptic solution. Hence they have a tendency to perpetuate the condition.

The next important problem where surgery has failed, is the removal of the necrotic bone. We need only to suggest that it is impossible under ordinary conditions at operation to differentiate between living, dying, and dead bone, especially if there are no loose sequestra. The very fact that some still advocate the total removal of the diaphysis is a confession of this fact. They would rather remove the whole bone than chance leaving some dead bone behind. Furthermore, there are many illustrations of the fact that some cases heal without the removal of sequestra.

After removal of large pieces of bone it has been a problem to eliminate the remaining cavity. This has been attempted by the folding in of the surrounding soft tissues to eliminate the space. From a functional as well as cosmetic consideration, the results are far from encouraging.

The treatment with maggots after the method of Wm. S. Baer, seems to cope with these difficulties in a measure beyond all expectations. The maggots remove bacteria mechanically by ingesting and digesting them. They also excrete or cause to be excreted something in the wound which has a definite germicidal action. The bacterial count of smears taken from week to week in any case under this treatment shows a marked progressive diminution in the number of bacteria. The final result of the action is that the maggots themselves cannot live in contact with the wound.

The removal of dead tissue from the wound by the maggots is almost phenomenal. They feed on the devitalized tissue until it has all disappeared. So soon as they attack tissue which is viable and demonstrates its vitality by bleeding they immediately desist and leave this scene of action. Hence there is no danger of any living tissue becoming injured or removed by the maggots. They go on feeding on the dead tissue while the new succulent granulation tissue is springing up all around them and in no way interfere with, but rather seem to stimulate its growth.

A bone wound under maggot treatment fills in with granulation tissue in a few weeks. This granulation tissue originates from the periosteum and from the connective tissue of the contiguous viable bone. It quickly covers the floor of the wound as well as the side walls and roof of the tube of bone. It seems to immediately form over the areas that have been cleaned up and freed of thin necrotic covering by the maggots. The granulations keep piling upon themselves until the entire cavity has become eliminated, then the epithelium merely grows over the surface. The contour of the limb is normal, there are no depressions or flattening, except in those cases where previous operations have removed much bone tissue and distorted the contour of the limb.

THE MAGGOT TREATMENT

Indications.

Acute osteomyelitis after eight days of drainage.

Chronic osteomyelitis.

Tuberculosis of bones and joints.

Osteotomy and Sequestrectomy.

General Preparation.

Most of these chronic cases are anemic and have little reserve vitality. Some are suffering from chronic parenchymatous degeneration of the viscera or even amyloid disease. A preliminary course of iron tonics and liver extract is advisable. A diet rich in albumin and minerals to replace the devitalized tissues and plenty of fluids should be given to replace those lost by constant drainage. During this preliminary

period the patient's morale may be built up and he may be allowed to see other patients improving under the method, to create anticipation, enthusiasm and co-operative spirit.

During this period the affected limb is kept at rest and the skin kept clean by frequent changing of dressings. No antiseptic solutions are applied. The skin may be cleansed with soap and water and dry sterile dressings applied. The operation should not be attempted until the general condition is good enough to make the administration of a general anesthetic safe. The possibility of considerable loss of blood at the operation must also be kept in mind.

Operation. The limb is washed thoroughly with soap and water and dried. A large sterile dressing is applied and covered with a towel. The instruments are sterilized in the usual way. The operator and assistants scrub and prepare as for any major operation. The patient is draped with sterile sheets. No iodine or other antiseptics are applied after the dressings are removed. If any pus is present it is wiped away with sterile swabs and normal salt solution. A tourniquet is applied to prevent hemorrhage.

Incision. The length and location of the incision are determined after the extent of bone involved and presence and location of sequestra are determined by good x-ray plates taken in several planes. The larger the sequestrum, the longer the incision. The exact location of the incision should be as nearly over the involved area as possible. The character of the tissues over the bone and feasibility of keeping the cage in place later may influence the position and type of incision. In the leg it is better to make the incision on the inner side of the inner border of the tibia. In the thigh the incision is best made anteriorly or laterally. In the arm the incision should be made anteriorly. The incision is made parallel to the long axis of the bone and directly down to it through the periosteum.

A window is chiselled through the involucrum bringing the sequestrum into view. If no sequestrum is present, the window is made through the cortex into the necrotic area. The sequestra are gently loosened and removed. The cavity is cleansed with small swabs. If a curette is used care must be exercised. It is better not to scrape the bone. If large blood spaces are opened embolism may follow.

It is not necessary to saucerize the bone or to remove overhanging ledges unless they are necrotic. The greatest conservatism is exercised in removing viable bone. The small amount of non-viable bone accidentally left will separate and be removed by the maggots. When the wound is thoroughly cleaned out and dried with small stick sponges held in forceps, a final inspection is made. The wound is then packed with sterile vaseline impregnated gauze to the very top. Baer in outlining his treatment advocated the use of plain gauze. We have found the removal of plain gauze a very painful procedure, which is usually followed by subsequent bleeding and have therefore adopted the use of vaseline gauze. A few dry dressings are placed over this and a firm bandage applied. This may be covered by a starch bandage to continue a slight pressure on the packing, which decreases hemorrhage.

The tourniquet is removed and the limb is enclosed in sheet wadding. Any deformity is corrected and the joints are placed in a position of physiological rest. A posterior or anterior molded plaster splint is applied to hold the limb in position. The splint must be placed in such a position as not to interfere with the future dressing of the wound. After this operation there is practically no pain if the limb has been securely immobilized.

In some cases it is advisable to give 500 to 1,000 cc. of normal salt solution subcutaneously to combat shock and to further rapid convalescence. If pain should occur, small doses of morphine will easily control it.

Implantation of Maggots. Three or four days after the operation, the bandages and dressings are removed under aseptic precautions,—the vaseline gauze is gently withdrawn with hemostatic forceps. If sufficient gentleness is used and the packing gradually removed, the procedure is painless and very little hemorrhage follows.

The skin about the wound is dried with sterile swabs and a cage is applied with adhesive plaster and securely fastened without undue pressure. The maggots are introduced through an opening in the cage The opening is then closed with its lid, which is also fastened with adhesive plaster. The maggots, when introduced, are from 48 to 60 hours old. They are left in the wound five days, when they are washed out with

sterile normal salt solution and new ones are implanted. A new cage is applied each time.

The patient can feel a slight biting sensation when the maggots attack the tissue. Sometimes a severe tickling sensation is experienced when they wriggle along the skin. This may be stopped by covering the skin within the cage with a thin coating of collodion. This is seldom necessary but does no harm.

During the first four or five applications, the maggots grow and thrive on the food obtained in the wound. While this is going on considerable thin serous discharge drips through the cage. There is some odor—and the soiled cage and dressings are no things of beauty.

Gradually the discharge becomes lessened and the odor almost disappears. The wound secretion turns from acid to alkaline in reaction, and the bacterial count diminishes until they disappear entirely. After about five to eight applications the maggots die within a few hours after being placed in the wound. About this time the cavity has become filled with healthy granulations until they are even with the skin edges. It will be noticed that the wound is much narrowed and shortened in length. The maggots are then left out, but the wound is covered with the same type of cages which allows light and air to enter. Gradually the epithelium covers the granulations and the wound is healed.

Sometimes in a few days the pus reappears and the wound seems to cease healing. The granulations become covered with a yellowish or grayish membrane and the wound again becomes acid in reaction. Maggots are then re-implanted until the wound cleans up and they again die in contact with it. A few days later the wound closes.

CONCLUSIONS

1. The maggot treatment for osteomyelitis is practical.

2. It overcomes the difficulties which have determined failure in many other methods of treatment.

3. This treatment employs the principle of a viable antiseptic which works in accordance with the doctrine of Lister.

4. The period of its use in the treatment of osteomyelitis is too short to draw definite conclusions as to the permanency of the healing.

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DISCUSSION

Dr. George deTarnowsky, Chicago: I just want to illustrate the fact that those of us who served overseas learned to appreciate the live-saving properties of our faithful friends, the maggots. During the Argonne siege we received in the evacuation hospital soldiers who had been wounded ten days previously and had only received one dressing. It was surprising to find that these cases full of maggots presented clean, dry wounds. These patients came in afebrile with no sign of sepsis.

There is no question but that the maggot treatment is an excellent one. Baer in the base hospital had occasion to observe that more closely than we did in the evacuation hospital, because we had to get rid of our cases in twenty-four to forty-eight hours. The surprising thing is that Baer laid so much stress on the sterilization of the maggots. Maggots are scavengers and they do not touch living tissue. Why he should go through all this formality of sterilization I do not know. None of the maggots in the Argonne were sterilized. They got into the tissues and stayed there. If you put a piece of stale meat in the basement and get it full of

maggots, you will get just as good treatment as Dr. Baer had. It is coming back to Dame Nature. I think it is an excellent method.

Dr. Frank G. Murphy, Chicago: At the University of Illinois we are using the Orr treatment quite extensively. We have between ten and twelve cases there now on this treatment. The period of disability has been rapidly shortened.

I am very much impressed with this new maggot treatment which Dr. Czaja has shown. If it will reduce the period of recovery as much as he says it has, I think it will be a fine thing to try in selected cases.

Tetanus was a potential danger in all wound cases in the European war. I was over there. All wounds were given antitetanic serum. I hardly believe the maggots were instrumental in causing tetanus.

Another thing about the maggot; thirty years ago we had a famous surgeon in South Chicago by the name of Larkin. Occasionally in the summertime dressings would get filled with maggots. This surgeon would take off the dressing, clean off the wound with alcohol, brush the maggots into the wound and re-apply the dressings. The results were good. This treatment can be used not only in osteomyelitis cases but in chronic septic cases.

Dr. A. H. Baugher, Chicago: I would like to ask the essayists if the maggot treatment would be beneficial in cases of extensive burns where we have ulcerating, infected areas, highly resistant to epithelialization, many of which under the present method of treatment yield abundant scar tissue or keloid formations, which may ultimately result in a malignant transformation, usually sarcoma; or in very old cases of osteomyelitis, for instance of the tibia, where a portion of the margin of the ulceration in time may develop into a carcinoma I have in mind two patients—one developed a sarcoma from a scar due to a burn received as a child twenty-five years previously; the other developed an epithelioma in the margin of an ulcer to a fistula leading to an osteomyelitic process in the tibia, of a man of fifty years who has had osteomyelitis for thirty years. If the maggot treatment is good for dead tissue, as this is apparently the basis for treatment, would it not be good for large ulcerating areas which later may produce malignant changes? This method of treatment then, in so far as it is an aid, would shorten convalesence and also be prophylactic regarding malignant growths.

Dr. Philip H. Kreuscher, Chicago: Since Orr described his treatment four or five years ago I have followed his technic rather carefully and have operated on nearly 300 cases of osteomyelitis involving the various bones of the body with results better than any that I had obtained previously. I have not subscribed to nor have I used the maggot treatment for two reasons: first, because we are getting better results with the Orr treatment than we had ever gotten before, and second, because of a personal abhorrence I have to the presence of foreign objects, such as maggots, anywhere near or on the body. I do not know what the reaction would be in a private patient if you were going to implant maggots into his jaw bone.

The work now being done by Livingston at the Edward Hines, Jr. Hospital is very good. Incidentally, I understand that Livingston is the man who worked with Dr. Baer. As I understand it, Livingston worked a great deal on the sterilization of maggots. I do not want to anticipate any report which he may make in the very near future, but I predict from what I have seen over there in the last three or four weeks, that in the very near future a report will be made concerning an enzyme or a secretion from these maggots which will make it unnecessary to introduce the actual maggot into a wound. I am very much impressed with some of the results I have seen.

I feel that Dr. deTarnowsky is probably not entirely correct when he states that maggots are not septic. I believe that Dr. Baer reported one case of tetanus which he saw in connection with the maggot treatment. As I said in the beginning, any treatment which gives us better results and more rapid results must be adopted sooner or later. If we can once educate our patients to endure an application of this sort of thing, it will probably be more extensively used, unless someone in the near future can show us something where the actual maggot treatment is not necessary.

Dr. E. H. Weld, Rockford: It seems to me there is an explanation of why the Orr treatment does the work it does. There is no doubt it is a good line of treatment. Many of us had our surgical practice in college days by dressing these bad cases of osteomyelitis, and until I saw the Orr treatment I would have gotten on the stand and said that any man who left a dressing on three weeks would be guilty of malpractice. Dr. Kreuscher hit on it when he spoke of a maggot enzyme. I think there is a bacteriophage produced there and that is a possible reason for the success of the maggot treatment.

Dr. Jacob Myers, Chicago (closing): Dr. Kreuscher anticipated me in answering Dr. de Tarnowsky's question as to the advisability of sterilizing these maggots. I had a talk with Dr. Baer and he informed me that he had not one but three cases of tetanus, one of which died. He also had a case of gas bacillus infection that died. Those were not anything but a surface infection of the maggot and occurred before he sterilized the maggots. We cannot sterilize the inside of the maggot. We try to keep them aseptic. These maggots are raised from sterilized eggs. The egg is sterilized on the surface in 1:1000 bichloride of mercury to which is added one-half per cent. hydrochloric acid. When the maggot is hatched out it has had no contact with septic material. After incubating on sterile media for forty-eight hours we presume there is no surface infection. What goes on inside the maggot we do not know. If you attempt to apply the treatment do not forget that sterilization is an important feature of maggot treatment. The maggot treatment is an old treatment. Sterilization originated by Dr. W. S. Baer brings the treatment under control; in other words, you

are not adding insult to injury. If you use sterilized maggots, you are at least not doing any harm.

The question was asked about using them for burns and in old cases of osteomyelitis. In burns where you have extensive necrosis of tissue it probably would be good. Practically it would be a hard thing to cover a large area with maggots and keep them in contact. Having a large surface lesion, I cannot conceive of any way in which you could keep the maggots in contact. Any case of osteomyelitis, old or new, is amenable to treatment. If you have epithelialization that has gone on from the skin into the wound and has become malignant, the maggots will not cure it. If it is a question of removing necrotic tissue or bone, the maggots can do it.

The question of what the maggots do; this idea of something being developed in the way of a protective body was absolutely original with Dr. Baer. He had an idea that either the maggot developed something or the irritation of the presence of the maggots caused the cells to develop something which had a beneficial action on healing, but we must not lose sight of the mechanical action of the maggots. They do ingest and digest this necrotic material and mechanically remove it. So you have not only the mechanical action but the biochemical action also.

So far as the bacteriophage action is concerned, McDonough says there is no such thing as bacteriophage. "That conception of the bacteriophage is due to the profession's general misunderstanding of the principle of immunity. The protein particles in the local area of infection and in the blood plasma act as immunizing bodies. When they become dehydrated or condensed they lose this property of producing immunity." So we are not sure there is such a thing as bacteriophage. Why go into any lengthy discussion about it. No one has ever seen it or proved the existence of it and McDonough has proved the non-existence of it.

In regard to the Orr treatment, if the Orr treatment is as efficient as we are led to believe, why after twelve years are there 10,000 cases of unhealed osteomyelitis registered in the U. S. Veteran's Bureau. This Orr treatment has been taught to all men in the government hospitals, besides being used in private hospitals.

The reason we went into such details in this study of the anatomical and pathological considerations was for that very purpose; to figure out the reason why the former methods of treatment did not do what we expected them to. If you give time enough, nature will do almost anything without any help. We have figures we must face, figures by Dean Lewis in an article written as late as 1929. There are now sixty per cent. of unhealed cases that had the Orr treatment and every other treatment. We had only a small number of cases in which we applied the Orr treatment; may be we did not apply it properly. We come down to the principle of attempting to do what nature tries to do, to get rid of bacteria and get rid of dying and necrotic bone. This method of treatment could very well be added to the Orr idea. In other words, we do not have any quarrel with Orr on the proposition of adequate drainage or any quarrel on the proposition of proper anatomical position or on the question of proper immobilization. We agree with all those things. We believe that in maggots we have an added factor that expedites the very things that nature is trying to do.

RHEUMATIC INFECTION IN CHILDHOOD

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CHICAGO

Rheumatic infection in children must be considered and defined as a general systemic infectious disease, the presence of which antedates such classical symptoms as joint pains, choreiform movements and cardiac manifestations. This disease complex presents a variety of symptoms not met with in adult life and differs greatly from the common conception of rheumatism.

Heart disease now occupies the first place among the causes of death. Most cases of heart disease among young adults dates back to childhood. These facts make the study and care of rheumatic infections in childhood of greatest importance.

Much work and study have been done in regard to the etiology of this disease complex. There may be some racial difference but our present statistics do not allow one to draw any definite conclusions. Climate seems to have decided influence upon the incidence of rheumatic infection. Statistics from Bellevue Hospital show that 43 per cent. of rheumatic manifestations occur during spring and early summer. The highest incidence in London, England, was found in late summer and fall. These periods correspond to the most changeable and damp seasons of the respective countries. Two-thirds or sixty-seven per cent. of rheumatic diseases in children occur between the ages of five and nine years. It is a disease of early child life. Statistics and our clinical experience clearly point to the existence of a marked family tendency. We often see several children in the same family exhibiting various forms of rheumatic infection. Certain instances have been observed where children brought in close contact with rheumatically infected patients later developed various forms of rheumatic disease. This would suggest the possibility of contagion. It is interesting to note

that the sanitary conditions do not seem to influence such prevalence to any marked degree, but management in regard to regular hours and regular habits of sleep, reasonable care in dress apparently have an influence on the incidence of rheumatic infection. There seems to be an individual predisposition. Some patients have a tendency to repeated attacks of same or different forms of rheumatic infections during a period of a few years. A certain group of children who exhibit very active lymphoid tissues, often termed exudative type, seem to be predisposed to repeated infections which often lead to rheumatism. The exciting organism is said to be various strains of non-hemolytic streptococci, but this cannot be said to be definitely proven nor has it been shown to be in any sense specific. Many children may be infected with similar strains of streptococci but only a few develop rheumatic infections. We may find an explanation for this in the theory that certain individuals are allergic to certain strains of organisms. Some workers have shown that rheumatic patients give positive skin reactions to streptococci or proteins from streptococci.

Repeated tonsillar and adenoid infections have long been regarded as the main introductory disease of rheumatic infections. Recognition of chronically infected tonsils and adenoids and their early removal has done much in preventing and lessening the incidence of rheumatic infections, but this has not solved the problem. Dental caries and hidden sinus infections possibly play as great a rôle in producing a fertile soil. The often mild epidemics of influenza bring a staggering number of rheumatic manifestations in their wake.

We must, in order to intelligently fight against rheumatic infections, carefully study all possible foci of infection. By research and careful clinical observation recognize the child in the prerheumatic state. There is a variable time between the occurrence of focal infection and the presence of such manifestations as growing pains, polyarthritis, chorea, purpura and carditis. During this period the child exhibits many marked symptoms. With further bacteriological and serological research we will be able to prove just how far our little patient has traveled on the road to rheumatic carditis.

The early symptoms of rheumatic infections are: *Fatigue,* tiredness is always a serious complaint in a child. It should immediately put the physician on his guard. In general it denotes toxemia or possible bacteremia. *Crankiness,* which is the result of the little one's tiredness; our little patient is laboring under a handicap which makes him cross. This is often mistaken for bad manners. *Pallor,* not a true anemia; hemoglobin may be normal but a marked paleness, particularly to the face, possibly a toxic vasomotor phenomenon. *Stationary or actual loss of weight.* These findings together with a slight rise in temperature, particularly during afternoon, and an increase in pulse rate make up the symptom-complex of the early or prerheumatic state of rheumatism in childhood. No doubt these symptoms I have just mentioned lead many of you to consider a tubercular infection. Early rheumatic infections simulate very closely the well-known symptoms of tuberculosis. Careful examination of the lung by physical examination and x-ray study and application of tuberculin test will establish the differential diagnosis.

Acute rheumatic polyarthritis, purpura, rheumatic nodes, chorea are clinical entities with which you are all familiar, and I shall not tax your patience by dealing with them in this paper.

The heart may become involved early, late or at any stage of this generalized infection. Carditis should not be regarded as the end result of rheumatic arthritis or chorea, nor the terminal complication of rheumatic infections.

The very first attack of tonsillitis or other streptococcic infections may result immediately in a typical attack of acute carditis. On the other hand, many patients pass through repeated attacks of infection giving rise to growing pains and arthritis before they succumb to heart infection. The pathology of carditis has been studied in detail and we are all well versed in the classical description of the changes in the mural and valvular endocardium as well as the myocardium itself. Clinically it seems that we must reckon with toxic changes in the heart in order to explain our findings in early carditis. Carditis in children is not ushered in dramatically, but its onset is most insidious. Only by careful routine and repeated examinations is it possible to detect it early. If we are gaged by the time-worn heart findings in examining these hearts,

the diagnosis will not be made until the damage and wreckage of infection present themselves. The symptoms of early carditis are those of the pre-rheumatic state together with a persistent high pulse rate, temperature variations becoming more marked, exhaustion after moderate work and shortness of breath. Various fleeting pains, often referred to as growing pains, are usually elicited upon careful questioning. Abdominal pain of rather vague nature is another common symptom. This may be due to toxic effects on the gastro-intestinal tract but more likely we are dealing with a referred pain from an early pericarditis. Blood examination reveals a secondary anemia. The physical findings in regards to the heart are vague. The apex beat usually is forceful; there is a slight increase in the size of the heart, the action is rapid and a change in the first note at the apex. This change is either of a booming character, comparable to that heard in the "thyroid" heart, or there is a prolongation and a roughness of the first sound. Occasionally we find a friction rub over the base of the heart. The electrocardiograph, by which we may elicit the conductivity of the myocardium and the relative contractive power of the two ventricles, may often give valuable aid. Early carditis will often show an increase in the conduction time.

Careful attention should be given to lymphoid infections, such as tonsilitis, adenoiditis and cervical adenitis. Absolute rest in bed during the acute stage and for several days during convalescence will do much in preventing systemic involvement. All acute febrile conditions, such as scarlet fever, measles, pneumonia and so-called influenzal respiratory infections, demand prolonged convalescence and enforced rest. A detailed inventory of all possible foci must be undertaken before active treatment is instituted. The finding of one focus, such as chronically infected tonsils, should not prevent our further search. We often see a combination of several foci and they must receive their consideration singly as well as collectively. Primary foci are those receiving the infection from the outside world. Secondary foci are reached by way of the blood or lymph system. In any given case of rheumatic infection in a child the focus or foci of which have been determined, we should carefully consider the general state of our patient, also the presence of any secondary foci. *There must be an opportune, as well as an inopportune, time at which to subject our patient to surgery.* These patients are underweight, hard to manage; their routine management is usually poor. Pathologically, they are in a state of toxemia or bacteremia. The surgical removal of the focus is followed by a loss in weight, possible increase in absorption, *and is not in itself a cure of the condition.* Weighing these patients before and eight days after the operation will show an average loss of two and one-half pounds with a minimum of one-half pound and maximum of eight pounds. Sudden reduction of body weight lowers the resistance and vitality, placing the patient in a most dangerous position. A rigid management before and continued after the operation is of greatest importance. This management consists of a carefully planned schedule as to work, rest and diet. These children cannot be allowed to spend ten or twelve hours at work each day, but how often we find them starting the day at 7:30 in the morning, continuing through school work and hard play until 9:30 at night. No medications, vaccines, sunlight treatments or concentrated vitamines can produce high resistance in a body so overworked and mistreated. The half-day school, lunch at noon and two or three hours' rest in the afternoon have proven of great benefit to many patients during the early stages of rheumatic infection. Under such routine these patients will show a gain in weight, and may I point out that this is of the same importance in the rheumatic patient as we are accustomed to regard increasing weight in the tubercular patient. The child and his parents become accustomed to the rigid schedule of daily life and educated to realize the importance of natural means in recovering health and acquiring resistance to disease. Under this management we find gains of one to three pounds per week. Surgical intervention at this time, with due regard to anesthesia and surgical technic, will insure success in most cases.

The treatment of the early cases of carditis is usually gratifying, but we must here insist upon the most rigid scheme of management. Parents must be told that *rest and time are the most important factors.* Drugs are only complements to the treatment. The physician must clearly explain that the carditis is not a complication

of rheumatic infection; it is only one phase or one of the various organs or tissues affected by this systemic, all-invading infection. With these facts in view, how can anyone expect a cure by the removal of some or all primary foci when the patient also has several secondary foci, such as joint and nerve tissue involvement, and even the heart itself. This is particularly important as clinical experience clearly proves that these secondary foci commonly are the site of acute exacerbations. Absolute rest, both bodily and mentally, is the first and foremost therapeutic measure. We must go further than just prescribing this; we must arrange and supervise the same. Where this cannot be accomplished in the home, I believe institutional care should be resorted to. To further quiet the laboring heart, cold applications over the precordium have proven of great value. Medication should be directed toward the general infection. Salicylates seem to have a beneficial effect, not only upon the general infection but also possessing a sedative action. Where sedatives seem indicated, phenobarbital is most valuable. I do not believe any toxic effect is obtained with either drug in large doses. Digitalis should be thought of last and only used when the action of this drug is most specifically indicated. In prescribing digitalis, one should employ preparations of known strength and follow a definite plan of dosage. Rest in bed should be insisted upon until all acute symptoms have disappeared and prolonged thereafter at least from four to six weeks. This should be followed by light, carefully graded exercises which will have a beneficial influence upon the heart. We should strive for a happy medium between unnecessary prolonged rest and premature over-taxing exercises. When the opportune time presents itself, it is recommendable to deal with any primary foci present with the hope to stem the flow of further infectious material.

May I in closing make the following summary:

1. Rheumatic infection in childhood is a systemic infectious disease, the etiology of which is not clearly understood at the present time.

2. This disease complex has a symptomatology differing vastly from that of rheumatism in adults.

3. The importance of recognizing this disease early, particularly during the pre-rheumatic stage.

4. Attention and interest should be focused on the general supportive treatment rather than trusting to produce a cure by surgical means alone.

5. Carditis is common in childhood. If recognized early and treated according to a rigid scheme of management, gratifying results are obtained and many patients saved from becoming permanent invalids.

5307 Hyde Park Boulevard.

THE EDUCATIONAL COMMITTEE AND ITS RELATION TO THE COUNTY MEDICAL SOCIETY*

JEAN MCARTHUR
CHICAGO

It has been said that the two proper functions of a county medical society are first, education or enlightenment of the public, and second, presentation of programs to keep its members enlightened on the progress of medicine. The Educational Committee has made a very sincere effort to serve county medical societies in developing these two functions. For the purpose of discussion this paper will seek to show the relationship between the component societies and the Educational Committee in these two fields of endeavor.

Education or enlightenment of the public is not a new thing. Many lay organizations had well established health programs and health departments long before the medical society made any attempt to devote time and money to a definitely organized educational project. Women's Clubs, Parent-Teacher Associations, Men's Service Clubs, Elks and Shriners and other groups were giving time for the study of health conditions in their communities. The medical profession was interested in these health activities, but they were not given or did not take the rightful leadership. Lay groups have accused them of lacking cooperation in solving these important health problems. While much of this accusation has been misdirected, we should not blame lay groups too much or judge them too harshly for many of the difficulties and discords which have arisen.

*Read before Secretaries Conferences of Illinois State Medical Society, May 5, 1931, E. St. Louis.

During the past seven years the Educational Committee has tried to overcome some of these misunderstandings and establish mutual interest between lay groups and the medical society. There can be no question but what a certain amount of success has been attained.

We have not sought spectacular methods and programs, but rather have we endeavored to develop and build a solid foundation for a progressive health program.

Doctor Donald Armstrong of Framington, Massachusetts, has said: "It is comparatively easy to arrange a public health campaign which satisfies many of the desires of the people doing the work. It is far more complex to build a plan which will gain the cooperation of the outsiders, who are the very material of the plan, by offering them means to satisfy their underlying instincts. Perhaps the best single solution is to provide for participation."

The Educational Committee has always sought to promote and provide participation by medical men and the laity. The Committee knew from the very beginning that such work could not be successful without the cooperation of physicians as individuals and as organized county societies. It was evidenced that the lay groups welcomed the leadership of the medical society in the field of health education and their interest and cooperation has been developed. With these two divisions before us, the medical men and the laity, the Committee has proceeded to function. One need but to glance at the list of agencies and organizations with which the Committee has had some contact to know that there is need for such a central clearing house. Every year new groups come to the Committee for advice and assistance of one kind or another.

Some of you may think that the Committee has been slow in developing these contacts. We believe that this slowness has made for definite progress and that the foundation constructed will have a distinct bearing on future contacts and success.

Members of the Committee have met with small groups of leaders of these various lay organizations and discussed with them ways and means of smoothing out difficulties and methods of building a sympathetic understanding of a unified program. The Committee in turn has kept the county societies informed of the progress made through these meetings and has noted that members of the societies can assist materially by developing the contacts. The officers of lay groups have followed the same method in keeping their local groups informed. They, too, are confronted with difficulties, lack of understanding on the part of their local members and the inability to secure sufficient funds to circularize the entire membership. For that reason, we have recommended that local medical societies grant conferences, whenever advisable, with well organized lay groups. We have found a willingness on the part of these clubs and associations to seek medical advice. Their methods have not always been the right ones and we know that the wrong approach has often resulted in disaster. We have continually urged club women and men to confer with their medical men before undertaking any health program or activity. We mention that point in all of our dealings with lay groups. This gives the local physicians an opportunity of becoming the leaders and the authority for health measures in their own communities. Physicians today cannot afford to sit back and wait for these groups to come to them for advice and help. In some cases it is easier to go and offer good will and assistance if needed. No definite goal can ever be reached if we only sit by and do nothing, perhaps criticize a little here and there, but offer no constructive policies to these men and women.

The Committee does not believe that the physicians should be asked to undertake the actual work in carrying out these health projects, but they should have the direction and supervision of them.

There is probably no physician in Illinois who is not aware of the fact that the Illinois Congress of Parents and Teachers is interested in the pre-school child examinations, officially called the "Summer Round-Up." The primary purpose of this campaign is to promote the early detection and correction of defects in the pre-school child. The Educational Committee has told the state officers of the Congress that it believes the proper place for the examination of these children is the office of the family physician and on a fee basis. We have qualified our recommendations, however, with the statement that the method of examination depends upon the local county medical society.

The physician has nothing to lose by cooperation with such a program. He has much to gain. Individual physicians and county medical societies can strengthen their own position as leaders in such health activities in their communities by definite contact with and support of these programs and by keeping informed of the general health education program sponsored by the Educational Committee.

Lay groups are going to continue in the health education field. Big business has entered the field. If the laity is not guided and directed by the medical profession, they will secure aid through other sources. The Educational Committee believes that the physician because of education, training, and experience is particularly fitted for an important part in these health programs.

The Committee offers a certain feeling of security to the physician in the educational work he does as an individual. County societies or members are more willing to take an active part in these health activities when they know they have the support and backing of a committee representing the state society. The individual physician finds it easier to discuss protective health measures with his patients and their families when he knows that men all over the state are doing likewise. Medical men should let the public know what is being done for the benefit of public health. The people should be told that Illinois has a lower infant and maternal mortality rate than many other states which have accepted Sheppard-Towner money. They should know that the physicians of Illinois are interested in and studying the problems of infant and maternal mortality. Let them know, through conversation or public address, that the county medical societies are keeping abreast of the advances in the field of obstetrics and pediatrics. Tell them what the periodic examination of the child offers in future good health and what protection is absolutely guaranteed against certain diseases.

As a Chicago layman says, "We do not know what we want. Part of your job is to sell us on what we want, to educate us so we know what we want, why we want it, and then sell us on the thing.

"Do not simply say it to him, but hold him down and make him see it. Now, in all kindness do that, not with your fist doubled up, but hold his mind on this thing and tell him stories of people who had that thing and what happened to them. Insist, until you really get them to do the thing."

Medicine need not apologize for offering information about the wonderful accomplishments of its members. The public is interested, but they are going to remain utterly unaware of these facts unless they are told. Show them that you are concerned at the high morbidity and mortality rates in your county. Tell them the reasons for advocating the calling of a physician early in disease. It is very definite fact that the public is extremely conscious of the importance of the periodic health examination and of the early diagnosis of cancer. They want to know that the doctor is also interested in these questions and after an examination, they are not willing to be put off with a few words. Education of the laity, then, requires that physicians be able to answer and participate in discussion of their questions.

During the past year 553 talks have been given before lay groups by members of the Illinois State Medical Society. The physicians of the State have shown their willingness to take care of these many appointments some of which have been scheduled in communities where there are no doctors. There is no doubt but what every physician who took part in one of these programs was helped materially and mentally by meeting with such lay groups regardless of how large or small. No one person could possibly have reached such a large number of groups covering practically every county in the state. Cooperation of the individual physicians with the Committee, then, makes possible the wide circulation of health information in all sections of the State.

No effort has been made to promote meetings through the Committee, but rather our time has been spent in scheduling speakers to address ready made audiences of clubs and in schools. There is still a tremendous amount of work to be done in educating the public to secure its health speakers from proper sources. Here is where the individual physician, the county medical society, and the woman's auxiliary can be of infinite value to the Committee. Let people know that the Illinois State Medical Society maintains a Speaker's Bureau, and that the list

of speakers is carefully selected and kept up to a certain definite standard.

In addition to promoting and advocating the use of a central speakers bureau, there is no reason why the county medical society should not make use of the local newspapers. Editors use material about discoveries in every other field and yet silence is often maintained concerning the important findings of medical scientists which keep our communities healthy and safe places in which to live. In order to help county medical societies make use of newspaper columns, the Committee prepares and censors material suitable for release throughout the state. County societies have been offered this material to be used over the signature of the local county or state medical society. Hundreds of interesting articles are on file in the office of the committee. The material is written in a style readily grasped and understood by the public. At the present time about one hundred papers of Illinois publish this health column daily, semi-weekly, or weekly. The number should be increased and can be through the help of the county medical societies in making contacts with the editors of their local papers. There is no reason why any paper in Illinois should carry a health column prepared by men who are not physicians of standing. In some societies physicians have shown the editors the dangers of such columns and they in turn have welcomed an opportunity of securing, without cost, material which represents the opinions of the entire medical profession rather than the ideas of one individual.

The Committee offers county societies special material to be used when sponsoring diphtheria immunization campaigns, smallpox vaccination, cancer education, and other activities. The committee has often had to depend on a clipping service to bring information of these projects. A much better service could be given if physicians would let the Committee know that these campaigns were contemplated and the material could then be prepared with the viewpoint of that particular community where it is to appear in print.

We have never gone direct to the editors of the papers to make contact for this health column. That has been left to the county society for the policy of the Committee has always been that the county medical society is supreme in its decision concerning local health matters. Now that you know such a service is offered, will you not make use of it?

In New York each county medical society made a survey of the health activities of its county and the relation of the local profession to them. This no doubt brought to light many conditions which the medical profession did not know existed. Such an investigation would well bear experiment in Illinois. Lay organizations are needed in the county. Their cooperation is welcomed by the physicians. They are valuable for the great educational work they can do, for their influence on public opinion, legislation and laws, and in other ways. But the preventive medicine should be controlled and guided by the medical men of that county.

We hear much today about state medicine. Our college debating teams are taking up the subject, in fact, the Educational Committee has supplied 26 folders of material on this subject to debaters in colleges of Illinois, Indiana and Michigan. Physicians referred some of these students to the Committee. This has been indeed gratifying. Through our package library service, we were able to give these students material showing the dangers of state medicine and from reports we learn that the negative side won in most of the debates.

Thus a conversation here, a public talk there, newsprint and pamphlets, with an eye always open and looking for new fields brings about a better understanding between the medical profession and laity. It is through this type of publicity that the Committee during the last few months has been able to take care of some interesting requests. The Illinois Biology Teachers Association requested an exhibit of material suitable for use in schools, the Illinois Congress of Parents and Teachers asked the Committee to put on a demonstration of the correct procedure of the pre-school child examination at the annual meeting and for the first time in the history of the Congress the Committee had an exhibit, loaned by the American Medical Association, at this meeting. The supervisor of health education in the Oak Park Schools asked for suggestions as to material and methods of promoting health education in the elementary schools.

Several county medical societies have sponsored health campaigns. Winnebago County

carried on a diphtheria immunization campaign and the Committee furnished press material, copies of radio talks, and outlines for talks. This service is available to other county societies. There was a time when the public may have felt that any county medical society conducting such a campaign was seeking business. That idea has been discarded, for with the proper educational campaign the public learns that it is the gainer and in the end the physician is the loser in returns.

There is much to be done in the entire field of public education. The Committee has felt the responsibility of finding the proper methods of disseminating health news. The program has been outlined and has been supported by the county medical societies. It is time for constructive criticism to take the place of any destructive criticism that may have arisen. County medical societies can be assured full support and backing by the Committee in health measures they may wish to undertake.

The second function of the county medical society is to present programs to keep its members enlightened on the progress of medicine. The buildiing of a good scientific program probably rests as much with the secretary as any one. The Educational Committee, however, is in a position to help. Some years ago it was felt that county medical societies needed assistance in securing program material; especially was this true of the smaller and less accessible counties in the state. A group representing the Educational Committee, the Medical Schools of Chicago, the President and Secretary of the State Medical Society and a few others were called together to discuss the situation. As a result of this meeting, the Scientific Service Committee was established as a sub-committee of the Educational Committee. A list of speakers was compiled and has been added to every year until at the present time the entire field of medicine is very well covered, and a representative group of men from Chicago and down state are prepared to go out to present scientific papers. Special sub-committees have been formed from time to time to study special problems of current interest. The committee has not lost sight of the fact that 51 per cent. of all hospital space today is devoted to mental and nervous cases, and is working on a program of neurology and psychiatry which will soon be available to county societies. The Committee has encouraged county societies to study those aspects of medicine which were apt to put the doctor in a bad light in the public eye, such as the infant and maternal mortality rate. More meetings were encouraged to present talks on obstetrics and pediatrics.

Today we find an increasing amount of writing and discussion of the subject of cost of medical care and medical economics. The Scientific Service Committee has therefore secured speakers who are willing to present these topics to medical societies. The Committee has not lost cognizance of the importance of local men preparing and presenting papers before their own members, but they desire to schedule these men to give papers before other societies. The Educational Committee has offered the secretaries a press service which will give to all papers of the county and adjoining counties news items of meeting and speakers. These items are interesting to the reading public, not because they may note that their own physician is president, secretary, or holds some office in the society, but because they are glad to know that the medical profession is well organized and active. They are interested in the fact that meetings are held at regular intervals and that scientific programs are given.

The Committee, therefore, is always on the lookout for ways and means of developing educational programs for the public and for the county medical societies. The conduct of this program depends for its success on the support and cooperation given by the individual physicians of Illinois and the organized county medical societies. That relationship is important in developing contacts with lay groups, in promoting a better understanding of the problems and premises belonging to the medical society, and in building a constructive health program in our state.

DISCUSSION

Dr. H. A. Elkins, Mt. Carmel: It is indeed a pleasure to listen to this instructive and timely paper, and being secretary of a small society I can appreciate it all the more. There is nothing I could add to emphasize Miss McArthur's paper, except to reiterate that the medical man's position in the community is really that of the health leader. If he fails in performing that duty, false leaders will arise, and the public in general will suffer thereby. I think we are all interested in putting this campaign before the public. They

will profit by it. If any of you have taken part in these meetings you have seen the interest that is really shown on the part of the public.

In the smaller communities, one of the best ways to put it over is to enlist the aid of the local newspaper. I have found that the newspapers are very much interested. Recently the editor of a paper came to me and said that a patent medicine man wanted space in his paper, and as he was more than anxious to be cooperative with the medical society, he sought our advice. This is just a sample of the interest the county papers have in such work, and I think they can be counted upon for aid in presenting any health programs we may wish to place before the public.

Dr. E. H. Oschner, Chicago: For a number of years the impression has been growing on me more and more that the outstanding accomplishment in medicine of the last decade in the State of Illinois has been the work done by the Educational Committee. I think we have done more in this state in this line than in any other state in the Union, because we have had the untiring services of our president, Dr. Chapman, our president-elect, Dr. Ferguson, our very efficient editor, Dr. Whalen, and Dr. Hutton, and the very able services of our executive secretary, Miss McArthur. I do not think there has been anything done in the State of Illinois that has accomplished so much for the health welfare of the state and for the medical profession in general as the work of this committee. Our scientific papers are all right, but they do not reach the lay people, and if we do not reach them somebody else will. The difficulty has been on account of our fear of appearing as advertisers if we get out in our local communities and attempt to lead them. Under the guidance of the Educational Committee that is eliminated. We can act under the guidance of this committee and not advertise. The work of the Educational Committee has been faithful, unselfish and untiring, and I am glad for an opportunity to publicly express my appreciation of their work, for only too often the people who work the hardest get the least credit.

Dr. R. T. Pettit, Ottawa: I would like to call attention to the assistance we have received from this committee in our work in La Salle County. Last October I was elected president of the La Salle County Medical Society. Up to that time we had held two meetings a year. We have eighty members and there is always a question of getting up a good program and having a representative attendance. Dr. Weld, councilor of the Northern District, suggested that we do what is being done by Winnebago County—invite some of the surrounding county societies to attend our meetings instead of arranging for meetings for our members alone. We arranged to do this and through the help of Miss McArthur, who took charge of the mailing list, we have had a meeting every month during the past year and at no meeting have we had less than fifty men present, and usually over sixty. The meetings have been very successful. She does all the work and the county medical society gets the credit. The service that we have received through her has been very valuable and a great interest is being shown by all the members, several of whom have said that they felt as though they had never attended a real county society meeting before.

Dr. Harold Swanberg, Quincy: Possibly some of the younger secretaries do not realize the value of these conferences. Of course, the work of the Lay Educational Committee is old stuff to the older secretaries, but we must bear in mind that in the Secretaries' Conference there are many new secretaries every year. It is these men, that must be impressed with the fact that the Educational Committee can be a great aid to their society. I could say the same as Dr. Pettit. We have done the same things, and we have had quite large meetings. We have an annual All-Day Clinical meeting that has an attendance of several hundred physicians. You would be surprised at the large attendance and the distances these men came to attend our meetings. If you request the newspaper publicity, which the Educational Committee can arrange, you can get a large group to attend. They will put on a program for you if you want it. We have not asked for that, but they will do it. I want to second everything that has been said regarding the health columns in newspapers. We find that newspapers are anxious to publish information regarding the activities of physicians and the profession in general. They seek this information. They send representatives to our office after each meeting to find out what has taken place. Through the secretary, this information can be presented to the newspaper in a perfectly dignified manner and worthwhile publicity which reflects the good of the profession, is supplied.

Dr. J. J. Gill, Chicago: I would like to mention one thing which has not been touched upon by any of the speakers so far, and I bring this up as Chairman of the Committee on U. S. P. and N. F. and N. N. R. for the Chicago Medical Society, with which you are familiar. There is one thing by which physicians are doing themselves harm through their own neglect in writing prescriptions. Instead of giving a prescription for a legitimate drug they are prescribing too many proprietary preparations. The patient can read the name on the package and can go to the drug store and get it himself. With a little knowledge of the U. S. Pharmacopeia and N. F., any physician may write a prescription that the laity will not understand and, therefore, will not be able to go and buy it himself. The physician who gives his patient a prescription for a proprietary preparation is hurting himself. In the advertisements today drug houses are offering to send you samples—you hand these to your patients, your patients read the name and the uses and the first thing you know they have the habit of self-medication. My advice is to write your prescription in a legitimate way and save these patients from becoming their own doctors. I shall be glad to explain any of the work which our committee is doing along that line.

Dr. Grace S. Wightman, Chicago: As Health Chairman of the Illinois Federation of Women's Clubs I wish to speak in appreciation of the work of the Educational Committee of the Illinois State Medical Society. We have been in close touch with this work

for a number of years. In fact, I do not know what we should do for our health programs in the Women's Clubs and Parent Teacher Associations if we did not have this help. I think it is impossible to measure the value of this service. Miss McArthur spoke in her paper of medical leadership for lay groups. We believe that the state officers of lay organizations and the officers of the Illinois State Medical Society have very satisfactory understandings and plans, but we do not feel that these have reached the county groups to any worthwhile extent. We are hopeful that medical leadership may be given to county groups where it would be most effective.

Some two or three years ago the officers of the Illinois State Medical Society, the Illinois State Dental Society, the Illinois Federation of Women's Clubs, the Illinois Congress of Parents and Teachers, and the Illinois State Nurses' Association outlined very definite plans for county unit organization in order to give professional leadership to all these organizations; such activities as pre-school examinations, education in maternity and infant hygiene, school health, toxin-antitoxin and smallpox vaccination. This has not been carried to the county organizations as we had hoped it would be. We believe the lay groups are ready for medical leadership. They are asking for it, and it only remains for the County Medical Societies to become active.

By leadership in community health matters we mean that you should initiate, advise and plan with lay groups county studies in various fields, viz., infant death rates, unvaccinated and non-immune children, condition of milk supply, the tuberculosis and cancer problems, etc. Are not all of these matters which should concern the interest of physicians? If not, then within whose province do they lie? What group should study and advise as to their solution? I think Dr. Hall could point out a splendid example of medical leadership in Winnebago County in their toxin-antitoxin campaign. The DeWitt County Medical Society is planning the school health program for their children.

Dr. F. O. Fredrickson, Chicago: I believe the Illinois State Medical Society is to be congratulated on the fact that they have a wonderful educational committee working on our many health educational problems and conducted by Miss McArthur. Miss McArthur spoke about the willingness of lay groups to receive information from the medical profession. Here is a contact that will reach at least eighty thousand people in the state—the American Legion. To show you the importance of this contact, let me say that at the last national convention in Boston, a committee from Congress wished the endorsement of the American Legion for a bill changing the status of the medical men in the Veterans Bureau. This bill would do away with the present organization and adopt a plan that they have in the United States Army—taking young men and placing them in the veterans' hospitals with the rank of lieutenant, captain, etc., under complete army rule. You can readily see with the great building program the United States government has in mind, and the fact that the medical men now in the Veterans' Bureau would lose their positions and younger men would be placed in control, the tendency would be for the gradual education into institutional medicine, which would be an opening wedge for state medicine.

Fortunately, one of the men, Mr. Hayes of Decatur, turned to a doctor who was present and asked what it was all about, and he answered, "Kill it!" Illinois was the deciding factor in killing this piece of legislation. We have passed a resolution to make contact with about eighty thousand ex-service men, the Legionaires. A resolution also was passed in the Council of the Chicago Medical Society, a committee was appointed, and there will be a resolution presented to the House of Delegates advocating this contact through the State Medical Society. A resolution will also be presented recommending a new plan of organization with all the medical men in Illinois who are Legionnaires and members of the society.

Miss McArthur said in her paper that the secretaries of the different county societies should establish these contacts with the various lay groups. We are anxious, and Miss McArthur is willing to help. I think it would pay you secrearies to make a visit to the offices of the Educational Committee in Chicago where you may get a great deal of advice as to the best method of making these contacts in your own communities.

Dr. R. O. Stites, Industry: Not long ago I was requested to give a talk on public health before a group of high school students and as I had nothing in preparation, I asked Dr. Hall for his exhibit on what he calls the deplorable smallpox situation in Illinois. I reproduced it on the blackboard and the students seemed very much impressed. I think a good many of these groups understand pictures better, and get more information from them than in the talks we give.

Dr. Andy Hall, Springfield: I wish to call the attention of the secretaries to the fact that, in programs on public health subjects, we have available a number of reels of motion pictures for use from time to time. Any time something of this kind is wanted, if they will let us know we will send to them a reel that is worth while.

FACTORS IN TUBERCULOSIS WHICH MAKE IT A PUBLIC HEALTH PROBLEM*

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Tuberculosis is not unlike other diseases in that it continues its existence by implantation upon new soil. Since the discovery of unicellular plant life—bacteria—the living body, be it human or other, is recognized as the best possible culture medium. By virtue of its communicability, its insidiousness, its chronicity and its ubiquity, tuberculosis becomes a problem of in-

*Read before Section on Public Health and Hygiene, Illinois State Medical Society, May 7, 1931, at E. St. Louis.

terest not only to the individual suffering from it but to those who live in the same home and in the same municipality. That municipality may be a village or a city. Indeed it may be a state or a nation. The greater the population, the greater the problem.

Communicability. That tuberculosis is transmitted from person to person seems proven beyond doubt. Witness—the fact, that children of tuberculous parents are more frequently tuberculous than are children of non-tuberculous parents.

Careful history taking will reveal instances of non-familial transmission. Such was true of Mr. J. who for two years worked at a desk in a railroad office. Adjoining his desk was that of Miss C. who had spent two years curing in one of our neighboring sanatoria. The routing of papers was from Miss C.'s desk to that of Mr. J. At the end of two years we received Mr. J. into our sanatorium for treatment of moderately advanced pulmonary tuberculosis.

Complete or partial breakdown of immunity is brought about by entrance into the body of tubercle bacilli either in massive doses or in frequently repeated small doses. Tubercle bacilli may come from persons or from milk which has not been pasteurized.

Indirect implantation of tubercle bacilli is surrounded by a twilight zone. Many experiments seeking to dissipate the gloom have been done. Floating particles of dust carrying recently dried tubercle bacilli expectorated by some careless spitter must be reckoned as a menace until it is definitely proven that tubercle bacilli are very quickly killed upon separation from their host.

Elicitation of many histories leaves us no wiser as to the source of infection.

Habits of life which lower biological resistance are now recognized as aids to germination and growth of tubercle bacilli in the body. Such are underfeeding (often dignified by the title dieting) scantiness of clothing in inclement weather, over exercise, be it work or play, loss of sleep, intemperance, improper ventilation of living, working and sleeping quarters and lack of sunshine in home, office or shop.

Insidiousness. Tuberculosis makes its initial growth with little or no disturbance of physiological equilibrium. Unless the products of tissue destruction impinge upon nerve structures little or no pain warns of its presence. There are no prodromal symptoms, per se. At most loss of weight, afternoon fever, persistent cough and fatigue are suggestive. Of these symptoms one or two or three or all may be present. Two events may and frequently do occur to suggest the presence of tuberculosis. One is pleurisy with effusion and the other is pulmonary hemorrhage. Occurrence of either of these should cause the patient to seek his physician post-haste.

One need but cite two examples of insidiousness of onset to warn the unwary. Mr. T., a packer in a wholesale drug house, came to us in 1922 with no other symptom than that of fatigue. The sputum was teeming with tubercle bacilli. Physical examination and roentgenogram proclaimed an advanced tuberculosis with a large cavity in the right upper lobe. He entered the hospital full of hope. He went out six weeks later dead.

Mrs. K. had an attack of pleurisy with effusion in the left chest when she was a girl of twelve. Twenty-nine years later she began having repeated pulmonary hemorrhages. Examination disclosed not only the adhesions remaining from the early pleurisy but a large cavity in the base of the lung as well. There were no symptoms during three decades except inability to recover quickly from colds during the winter season. Pulmonary hemorrhages caused her to seek medical aid.

During the intervening years she married, gave birth to one son and two daughters whom she reared to adulthood.

Chronicity. Unlike acute infectious diseases, tuberculosis does not run its course within a period of a few weeks. Years are required for evolution of tubercle.

Successful therapy is returning to business and professional circles and to homes and clubs many individuals who bear in their bodies the scars of a hard fought battle with a relentless foe. They also carry in their minds knowledge sufficient to so adjust themselves into community life that they will remain a part of it for years to come.

We recall the case of a consulting engineer who is now sixty-five years of age. Forty-four years ago he recovered from pulmonary tuberculosis.

Much knowledge of a practical sort is needed to span more than two scores of years of living.

Knowledge of how to protect others against one's self and knowledge of how to hold the result of treatment.

Ubiquity. Neither age nor sex is immune from tuberculosis. Massiveness of dose and biological resistance alone determine when infection may occur. It is true that the childhood and the adolescent groups suffer most. Intimacy of contact in the home and mass contact in school account for predominance of tuberculosis in these early age groups.

No organ or system in the body is immune from tuberculosis. The fact that the lungs are the favored site for pathological activity strongly suggests that tubercle bacilli enter by way of the respiratory tract. These may be in the cough droplet or the dust of the street mixed with expectorated tubercle bacilli.

Public Health Measures. Ease of communication of tuberculosis requires constant watchfulness of known contacts until they acquire well stabilized immunity. Open cases of tuberculosis are deserving of far more attention than we give them. These need an intensive course of training by both physician and nurse to properly dispose of sputum and to protect others from being infected.

Insidiousness can best be uncovered by careful and constant attention to loss of weight, protracted cough, blood spitting, indigestion and ease of fatigue. This is a significant group of symptoms.

Probably no invalid needs more training than does a tuberculous one. The chronicity of his ailment will either engender self watchfulness or utter disregard for all sanitary rules. The latter places the community at a great disadvantage.

We are apt to regard tuberculosis as a disease of the lungs. It is that and more. It is certain that more attention should be given to the kidneys as sites of tuberculosis infection. We think surgeons recognize this fact more extensively than do those who confine their study to the chest.

To aid in solving public health problems most states have set up by statutory enactment Departments of Public Health. It is the function of such a department to make rules governing migration of tuberculous persons, to compile statistical information reference to tuberculosis, and to issue informative literature on tuberculosis. In addition the Department may find it necessary to exercise police authority where rules are disregarded.

Another aid is the clinic which is held as frequently as need be. To this, at the instance of the family physician patients may and do come for a check up.

There remains the greatest of all agencies engaged in spreading information to the public—the physician. He more than others typifies the soldier on the firing line. A word here and word there will in the course of months add materially to his patients' knowledge of tuberculosis.

Education and care should go hand in hand. Indeed were there no educational program our sanatoria, our physicians, our Departments of Health and our clinics would be much less valuable than they are today.

DISCUSSION

Dr. R. W. Dunham, Ottawa: I was very much interested in what Dr. Monroe had to say in connection with the communicability of tuberculosis in the adult. It has been only a comparatively few years ago when it was thought that such a thing was very improbable, but the medical profession of today is gradually coming to realize that it is not altogether impossible for the disease to be transmitted from one adult to another. This is especially true where a member of a family has tuberculosis, and is in intimate contact with other members of the family, eg. husband and wife. On the other hand, when the disease is known to be present and proper precautions are taken, there is very little, if any, danger of transmitting the disease among adults. This is borne out by the fact that surveys made among nurses, working exclusively with tuberculosis patients, and of those doing private duty, or general duty in hospitals, have shown no greater incidence of tuberculosis in the former, than in the latter group.

Tuberculosis is primarily a Public Health problem, chiefly because of its wide spread distribution, its chronicity, and its tendency to cause protracted invalidism. There is practically no phase of modern civilization that tuberculosis does not affect. The mortality and invalidism produced by tuberculosis makes it a national, as well as an international problem. The individual who is ill in the home is a source of direct contact. Generally speaking, the consumptive who has only limited, or no means of support, sooner or later becomes a burden to either private or public charity.

Today we find that tuberculosis is present in practically every corner of the earth. Compare this with the fact that among the aborigines of America and Central Africa, and among the Esquimaux in their native habitat, the disease is practically unknown. However, if the disease is introduced among these people, it develops and runs a rapidly fatal course. Hence,

we may well say that tuberculosis is a disease of civilization.

Living conditions, such as poor sanitation and poor ventilation, being factors which predispose to the development of tuberculosis, bring it into the field of public hygiene. Factories, shops, and all industries, must take the tuberculosis problem under consideration. During the late world war the Army and Navy were directly affected, both before the enlistment of recruits and during actual service. Many recruits were found unfit for service, because they had tuberculosis, and many more developed the disease during and following their service in the Army.

Tuberculosis causes about ten per cent of deaths from all causes. It has its greatest mortality rate between the ages of twenty and forty-five, which is the period of greatest earning capacity and productivity of an individual. The financial loss to this country alone amounts to about two hundred and forty million dollars yearly.

Measures for the prevention of the spread of tuberculosis have been introduced into the statutes of many states and cities, but there is much yet to do done, not only in endeavoring to limit the spread of infective material, but remedy those conditions which have been described as predisposing causes. We cannot say, even today, that the spread of tuberculous infection is any less than it was previous to the time these various preventive measures were introduced. However, the decrease in the mortality rate from tuberculosis is an indisputable fact, and statistics show us that the death rate from tuberculosis has been reduced by more than fifty per cent during the past twenty-five years. This is undoubtedly due to better living conditions in general with the consequent lessening of the factors which predispose to the development of the disease.

Institutions are gradually coming under the control of the Public Health Service as is evidenced by the fact that the building, equipment, and maintenance of sanatoria and hospitals are becoming more and more a public health program.

I should like to say in closing that if the medical profession is to support public health measures in connection with the tuberculosis problem, that they must recognize the importance of lending their co-operation first, to early diagnosis campaigns, because if cases are diagnosed early and cured they are no longer a menace to society. Second, to children's clinics, which enable us to discover the child in contact with an open case, thereby making it possible to isolate either the child or the individual suffering from tuberculosis; also to find the under nourished child, who has become infected, and institute supportive treatment immediately, either in the preventorium, or through the various dispensaries. Third, to advocate the holding of tuberculosis clinics in the various counties, under the auspices of the County Medical Society. Such a program would in my opinion aid materially in gaining greater control of the tuberculosis situation, by virtue of the fact that more cases will be diagnosed at a time when a cure can be effected and greater efficiency developed in locating and isolating contacts; also in treating the child who is suffering from tuberculosis infection.

Dr. A. A. Crooks, Peoria: I should have liked Dr. Dunham and also Dr. Monroe to have elaborated more particularly on the phase of early childhood diagnosis, that particular aspect of diagnosis which, in my opinion, is the only other avenue left for us to reduce the incidence of tuberculosis, and of course in recognition of it—reduce our mortality, that is, the recognition of tuberculosis in the child. In this phase of the early diagnosis campaign we are not getting anywhere very fast. You gentlemen who specialize in this particular field possibly will agree with me when I say that the incidence of tuberculosis in the past comparatively few years has not been reduced materially, and it is further my opinion that if we are to reduce the incidence, and thereby reduce mortality, the child must be our battle ground hence forth, because it is in the child of known gland tuberculous infection that our pulmonary type is recruited in later life.

Everybody here, or the majority of us, are engaged in public health activities and we ought to put our shoulder to the wheel and further aid the National Tuberculosis Association. It is being done sporadically. There is in some instances, particularly in Massachusetts, very pleasing work being accomplished and it is being done in a small way sporadically in other places. In the city that I serve, I am finding it extremely difficult, even with all the propaganda that has been put forward to get the people, even in this day of enlightenment, keyed up to the necessity of early recognition of tuberculosis, particularly in children, that we may save them. We are unfortunate in the city I serve that we have only five open window rooms in the school system. We are, however, developing another one this coming September, and the hue and cry of parenthood and the newspapers of Peoria is that there be open window rooms established in every school.

Another phase of remissiness in the preventive care that has been borne in on me so repeatedly is where we take a child in the grade school and coddle him along in our open window rooms and seemingly get complete arrest; he is graduated from the eighth grade and goes to high school, and we, in common with other large cities, are not carrying on in the high schools because we have no open window rooms in our high schools as yet. So, too many that we have been able to benefit during the grade school period have gone into their post adolescent period during the junior year in high school with an active pulmonary tuberculosis. This particular field, it seems to me, is so virgin; hardly the surface having been touched. It would be my appeal to everybody here to actively interest the counties they serve in a widespread diagnostic campaign. There may be some of you, and no doubt there are some of you here, who would say that the skin test is of no particular importance. That particular objection is not borne out by my own personal experience. In a group way, I feel the first line of contact would be the skin test in the pupils of your grade schools who are able to get the consent of the parents. Now whether

this is done through your physician or whether it is done in the clinic with your physicians asked to be present to give the skin test, I think, is not so material, so long as it has the approbation of your county medical society.

So, I think the prime thing is in our early recognition of tuberculosis, particularly in childhood tuberculosis.

Dr. Arlington Ailes, La Salle: I just want to add a few words on the infectivity of this disease. Recently I took a tour under the auspices of the Rockefeller Foundation to study some procedures in tuberculosis work that was going on. In Kingsport, Tenn., they are putting on a special study under the auspices of the Julius Rosenwald Fund and the State Health Department. They have in their unit, making the study, an epidemiologist, two clinicians, a nurse and a clerk. They told me there of the case of a man who was supposed to have chronic bronchitis, but who evidently had the chronic fibrous type of tuberculosis, and who started a barber shop. In a short time two employees working near him became infected with a rather acute type of the disease. Later this man closed his shop and opened a beauty parlor, in which his sister and another lady worked, and I understand that both of these came down with the disease before they got the man into the clinic and made a diagnosis of tuberculosis. This is another story of the infectivity of this disease, and it is apparent that we may have a great many chronic tuberculous people with a diagnosis of chronic bronchitis, who live for years spreading their disease.

Now they found in their study at Kingsport that 60% of the school children from 6 years to 15 years of age gave a positive intradermal test for tuberculosis. In following up these positive school children, they were able to find in about 90% an adult case in the home or among close associates. These cases were frequently these chronic fibro-caseous types of tuberculosis that were regarded as chronic bronchitis.

Now Kingsport is an industrial community that has been built up in very recent years. They have a lot of natural resources down there, which induced monied men to come and start a city. One of their inducements, I think, was cheap labor furnished by the mountain people of the region. These people flocked in there, and thus were suddenly transferred from an open air mountainous life to a more or less indoor industrial one. While the company-owned industrial homes looked nice on the outside, I am told that insanitary conditions frequently prevailed inside, and that often there were two families to a home and the beds were sometimes occupied 24 hours out of the day. This could happen where there was night and day employment. Tennessee has more tuberculosis than any other state in the Union, if the transients of Colorado and Arizona are excluded. So you can figure that they must have a lot of tuberculosis. At Kingsport they have more tuberculosis among the whites than among the colored; approximately 90% of whites to 80% of the colored showing a positive tuberculin test. Of course their colored population work as gardeners, janitors, etc., while the whites work in the factories and come from the type of population I told you about. The factories in Kingsport, I believe, are said not to be particularly hazardous for tuberculosis. Here is an example of this infectivity. They had examined nearly 2,000 of the population when I was there, and if I remember rightly had found twenty-one active and suspicious cases per reported death.

When I got up to Cattaraugus county, N. Y., I found a different type of population. There the Milbank Foundation is putting on a special study of tuberculosis in a few rural townships around Ellicotville, a little village of about 700 population. There the death rate from tuberculosis is low, being about 30 per 100,000 population, and there they were finding only about 10% of the children positive to the tuberculin test. So this is another evidence of the infectivity of this disease. Where there is a high tuberculosis death rate there is a high infectivity rate among the children. Now since these positive children give us leads to so many cases in the homes or among close associates, it appears logical, as the doctors have pointed out, that the place to begin is in the school with the tuberculin test, followed by an x-ray of the positive cases.

I would like to ask the essayist and discussant a question as to the practibility of treating in the homes, these cases of childhood tuberculosis which we might find. Somewhere I have acquired the notion that nature is kind to these children, and that if you give them half a chance, almost one hundred per cent will get well. Is it practical then by finding these cases in the school, letting the parents know about it, lessening their studies, regulating their lives, giving them more hours in bed, and seeing that they have plenty of good food and fresh air, to cure these cases at home?

If these unhealed cases of the glandular type can go over into adolescence and adulthood, and become the adult type by infecting the parenchyma of the lungs, and we can cure them by early diagnosis and home treatment, then it looks like we will begin to have, at least, a partial solution of our tuberculosis problem, because then we will be able to prevent a lot of cases going over into the adult type to infect or reinfect others.

At the Phipps Institute in Philadelphia they showed us another example of how to get the early cases. They were inviting certain groups of people, such as classes of students, ' ome to the Institute for an x-ray of their chests, .ithout regard to symptoms, and they were finding a small percentage with latent pulmonary tuberculosis. I was much impressed as Dr. McPhredran was showing two x-ray films to a big strapping young law student, who was denying the possibility of himself being infected. Dr. McPhredran said to him in substance, "Here is your film six months ago and here is the shadow in the apex, and here is the film we took of you yesterday. The reason that I asked you to come back is, that the recent film shows definite advancement. Now is the time for you to get under proper supervision and be cured, but if you wait for further advancement of this disease, or until intoxication begins and you have appreciable symptoms,

then you will have to go to bed and make a long fight for recovery."

So it looks like we should, if possible, go into the schools and high schools and make the tuberculin tests, and x-ray the chests of the reactors, and get them under the supervision of the family physician for whatever care he may be able to secure for them. Certainly if this work was done on a large scale the home would have to be the place of supervision, as only a small percentage could be given institutional care. Finally all that are positive to the tuberculin test should be intensively followed up to determine the source. Then these adult cases which would be found, should be gotten under supervision to prevent infection and reinfection of others.

Dr. Monroe, in closing: I want to thank Dr. Dunham for his discussion of the paper. I believe there is a ray of light in the solution of the tuberculosis problem. The bovine type of tuberculosis, a source of infection of children, is rapidly disappearing in the State of Illinois. We have left then the human type of infection and the avian type. For our purpose, we might disregard the avian type and say that only the open case of tuberculosis in Illinois is the source of infection. Now just what to do with the open case of tuberculosis is the real problem and the crux of the whole situation. I think our principal trouble is that we have treated tuberculosis very much like we treat a great many other of reforms—soon as we put the thing over, or think we have done so, we promptly forget it. A reduction of mortality of fifty per cent in the last twenty-five years brought about a cessation of activities among physicians especially. I feel that we are more to blame than anybody else in this country for being in the doldrums as to tuberculosis at the present time. Right in my very county which adjoins St. Clair, we built a sanitarium that cost two hundred and fifty thousand dollars. The building opened; a hundred doctors in Madison County said, "We have solved it. Now let's do something else."

We are learning that the problem is not solved. Some of the patients who were taken to that sanitarium are open cases and they may go back to their communities a source of infection. We have also found that for every tuberculosis death there are ten patients living somewhere in that same county who are actively tuberculous. I believe we never will solve this thing until we know what to do with the open cases. A child with the glandular type of tuberculosis will not infect any body. It is the open case, the chronic, who is frequently unrecognized that is the source of all the trouble.

Now as to the method of building up these children who are known to be tuberculous. Dr. Crooks has brought out the matter of the school and the open window. This is a method of real progress. It is the preventorium plan of treatment. We are happy if we can incarcerate the tubercle bacilli within the lymph nodes of the chest and keep them there and that seems to be a feasible thing.

We have in our own sanitarium at the present time thirteen children. We take them in there in spite of the fact that there are adults in that sanitarium. We send these children out in much better condition than we get them because, if a sanitarium is to prove its worth in any place, it certainly does prove it when children and adults are treated in the same building. We do not put children and adults in the same room; they are kept in their respective rooms and are much better isolated in our sanitarium than they are in other places in the whole country, be it the church, Sunday school, public schools, moving picture shows or what not. We take these children and train them. We feel that these children are to be our messengers and our missionaries in time to come, and that our work really must be done with the children from an educational standpoint.

There are two tests, the von Pirquet and the Mantoux that seem to be giving us some very definite information.

Within two or three days from now several of us will be on our way to Syracuse, New York, to attend the coming meeting of the National Tuberculosis Association. I rather think that the American Sanitarium Association will go on record as favoring for suspected tuberculosis the use of these two tests. If they prove positive, then the x-ray will be used further to confirm the suspicion of the presence of tuberculosis. After that is done, it is entirely a method of treatment and we can get just as much treatment as we are willing to pay for.

SEMINAL VESICLE INFECTION

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Seminal vesicle infections are of considerable interest and importance to both general practitioner and urologist. Because of the frequency of occurrence, the difficulty of cure, the possibility of sterility and the economic loss to the patient, cases of this type are of particular importance. It is the purpose of this paper to make the clinical picture and the treatment of this condition clear in the minds of practitioners who encounter it infrequently.

Various authors have estimated that seminal vesiculitis occurs in from 10 to 90 per cent of all cases of gonorrhea. While the great majority of vesicle infections occur as complications of gonorrhea, there are many cases of infection with the ordinary cocci or bacilli following instrumentation, sexual excesses or from foci of infection, i. e. teeth, tonsils, intestine, etc. The great difference in percentage of occurrence may be explained by the fact that many infections are silent ones and are not discovered unless

looked for by examination of the expressed secretion.

In speaking of seminal vesiculitis we should more properly term the condition a prostato-vesiculitis as the infection occurs concurrently in prostate and seminal vesicles. However, in many cases one or the other is more involved as is easily discovered by rectal touch.

It may be well to speak here of the prevention of this distressing complication. As a great majority of cases of gonorrhea are complicated by prostato-vesiculitis, it is during the treatment of the gonorrhea that care must be taken to prevent its occurrence. If the treatment consists mainly of injections of the silver protein salts by the patient himself, he must be thoroughly instructed so that great gentleness is his byword. He must be warned against having sexual excitement or indulging in alcoholic drinks. The physician must also use great gentleness in his personal treatment of the patient. If the treatment is by irrigation, low pressure must be used i. e. the fluid level not higher than one foot above the urethra and the urethra cleansed by allowing the fluid to flow gently in and out.

The pathology is that of an acute inflammation of the gland with the walls infiltrated and thickened and matted to the surrounding perivesical tissues—a perivesiculitis. Because of its complicated structure, the lumen is dilated in places and in others contracted by stricture formation. Abscess formation is very rare. The infection is always bilateral and always associated with infection of the prostate of varying degree.

The symptomotology of vesiculitis is varied but may be briefly considered under the following groups: local symptoms comprising pain or a feeling of fullness in the rectum, dragging perineal pain, frequency and burning on urination amounting at times almost to complete retention and urethral discharge. In chronic cases the typical morning drop is present.

Referred symptoms are low back pain and testicular pain so typical of seminal vesicle disturbance. Vesicular colic usually occurring at night often simulates typical renal colic and at times is very difficult to differentiate.

Metastatic symptoms include the many and varying joint pains which are common complaints.

Sexual symptoms in acute inflammation may consist of hemosperm with pain during coitis or on ejaculation. In chronic inflammatory disease, loss of erections and ejaculatio precox, are the complaints. There may be any grouping of the above and none of the symptoms taken alone are typical of prostato-vesiculitis.

No account of seminal vesicle infection is complete if epididymitis, its common complication, is not mentioned. When the epididymitis is acute the vesicle will usually be infiltrated and tender. Chronic relapsing epididymitis may be associated with chronic vesiculitis. In any case of suspected prostatic and vesicular infection, the first massage should be nothing more than gentle stroking to prevent stirring up latent infection and producing epididymitis.

Usually the diagnosis is simple. Given a history of a previous gonorrhea, especially with complications, with presence of one or more of the previously mentioned symptoms and typically the morning drop, suspicion of a seminal vesicle infection is at once aroused. The absolute diagnosis is made by finding pus in the secretion obtained by massage. The diseased vesicle is often palpable, indurated and sensitive to palpation although a definitely diseased vesicle may not be palpable. The multiple glass test is of value at times to determine which prostatic lobe or vesicle is more seriously involved. The patient can fill his bladder by forcing fluids or it can be filled with warm boric solution before the examination. He then voids small portions of the retained fluid into two glasses. Then the prostatic lobes and vesicles are massaged separately with small portions of urine or solution voided into separate containers after each massage. The urine will be more cloudy and pus will be found in the glass following massage of the organ chiefly involved. In the complete diagnosis it may be desired to determine the type of infection, particularly the presence of the gonococcus. This may be done by stain, methylene blue or gram, and by culture of the secretion obtained by massage. However, in the routine treatment this is not necessary.

The treatment in the acute stage consists of rest in bed with relaxation of the parts by rectal suppository of morphine or morphine by mouth. If the vesiculitis is a complication of gonorrhea, all local treatment is stopped during the acute stage. Perineal heat is comforting and the acute urinary symptoms may be relieved by hyocyamus

and citrate mixtures. The diet should be soft and fluids may be liberal if the urinary symptoms are not severe. If, however, there is marked frequency and burning on urination, the intake should be just sufficient to satisfy thirst. The temperature can be controlled with aspirin and tepid sponges. The scrotum is supported to prevent, if possible, the development of an epididymitis. After the acute process has been relieved, the inflammation may be attacked by local heat through sitz baths and hot rectal douches. We prefer to allow hot water of 105°-110° F. in repeated small amounts and held in the rectum for a short while, to the psychrophore. Some urologists prefer a two way tube so that a continuous stream of hot water is constantly flowing into and out of the rectum. Massage of the prostate and vesicles should be started very gently and repeated once, or at the most twice, a week. It is best to follow a definite routine in the massage of the prostate and vesicles starting first by emptying the vesicles by a few strokes beginning at the tip of the vesicle and following its course to the juncture of the prostate in a continuous stroke. After the vesicles have been massaged, each lobe of the prostate is expressed by a number of vertical strokes with the massaging finger starting at the outer border and working inward toward the urethra. Lastly, the urethra is emptied of the expressed secretion by one stroke.

In many cases the examining finger will be unable to reach the upper portions of the vesicles in which case the use of a massage iron is indicated. In every case the massage should be thoroughly and firmly done but in no case with great strength or roughness. Massage is our chief therapeutic agent in subacute and chronic prostato-vesiculitis. It must be done regularly over long periods of time with suitable intervals of rest. Each massage can be followed by an urethral instillation of argyrol or by an irrigation. Regular normal sex life is absolutely necessary in chonic cases, the difficulty being to determine the normal for the individual although it is safe to advise intercourse only two or three times a week, and not prolonged. Non-specific protein therapy is of value in this stage using any variety of milk proteins which are on the market or if the patient is under close supervision, intramuscular injections of boiled milk or intravenous typhoid vaccine may be used. Neosalvarsan injections have been used in resistant cases by a few urologists. Catheterization of the ejaculatory ducts through the urethroscope and injections of various mild antiseptics may be tried by those with sufficient skill although rarely done by most urologists. A new instrument recently devised by McCarthy for ejaculatory duct catheterization will probably increase the popularity of this mode of treatment. New forms of treatment by general or local vaccination using gonococcus antivirus or the toxin of the gonococcus is still in the experimental stage. Belfield's operation of injection of mild antiseptics, chiefly the silver proteins, into the vesicles through the vas deferens which is reached by a small incision in the scrotum, is not considered of value by the majority of urologists. Vesiculectomy for simple infection is rarely done.

Before discharging the patient the urethra must be calibrated for stricture, which, if present, must be dilated. If the prostato-vesiculitis is a complication of a recent gonorrhea, provocative measures must be carried out to determine cure; i. e. silver nitrate instillations, sounds, gonococcus vaccine, etc.

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TUBERCULOSIS UNDER GOVERNMENT CONTROL

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Thousands of books have been written on the history of preventive medicine; also, on the splendid work the United States Government did in eliminating typhoid fever that made possible the Panama Canal District, by first making the place fit to live in. Yellow fever was reduced to a minimum. Smallpox, which swept Europe, opening millions of graves, is reduced to a minimum on the mortality list. Diphtheria, which has claimed millions of innocent children as well as adults, has been brought down to a very small percentage. In fact, it should be considered a criminal act to permit anyone to die from this disease with our present knowledge of treating these cases.

There is one disease that still claims millions of victims annually with hundrds of thousands of deaths each year, with the economic loss of

billions of dollars to our country and one that still defies the scientific world, and that is the white plague, or tuberculosis.

Tuberculosis has existed in man as far back as history can be traced. The Greeks were familiar with it; so were the Egyptians and it has been proven without a doubt that it existed long before the Hebrews; and tuberculosis exists yet!

It is universal in all countries and makes no distinctions. It takes the rich as well as the poor; the educated and the ignorant; men, women and children, beginning in their cradles and staying to senility, and is responsible for one in every ten deaths. Ninety per cent of the population of the world have had or have tuberculosis in a dormant or active form and the dormant type is more likely to become active than the active to become dormant. It destroys the youth of our Country; it takes fathers from their families and mothers from their children. More people have been lost from tuberculosis than from all the wars combined.

What is being done to combat this disease? What are the great universities doing towards it? Where are those philanthropists who are donating millions of dollars for pecuniary purposes or the medical men who practice medicine for commercial purposes; or those great nations that are spending billions of dollars for experiments in building war destructive materials? Many scientific men have wasted and wrecked their lives in the search for cures to make it possible for others to live, and yet we are not any nearer than the early Hebrews.

Are we to sit back and throw up our hands in hopeless despair or are we to continue to search for a cure? Just as the problems of other diseases have been solved, so could they be with tuberculosis. It takes money and trained men or armies of trained men with ample facilities to make it possible for them to save the human race.

Science is built upon facts and the greater number of our people are enjoying the benefits of scientific discoveries. In this great civilized world of ours, we have developed a new type of genius of the obstructive type and many organizations of "antis" who, from various points, attack and assault the scientific martyrs, which is all due to lack of education and ignorance. Among them are organizations such as the Medical League, Anti-Vivisectionists, the Anti-Evolutionists, of which one of our great public speakers was a member. In this group are many physicians who commercialize medicine with the combination of various cults of quackery. All of these men come out of their nests as opposing forces with systematized ignorance wherever the scientific facts are to be presented for the welfare of the people.

Tuberculosis is a destructive, hopeless and fearless disease and just for the last few years has been frequently attacked but not conquered. The germs that are invisible to the naked eye are still a mystery to the human intelligent brain. Were it not for the fact that we are building natural resistance against tuberculosis by active immunity, the entire race would have been destroyed.

Observations made on autopsies, and tuberculosis tests made during life, have proven that very few who reach adolescence have escaped this dreadful disease. We may safely say that ninety per cent of all people living have had or have tuberculosis when they reach adult life. One hundred thousand persons die yearly in this country from this disease and about 1,000,000 people suffer from this disease in the active form and those that have the dormant type of tuberculosis might flare at any time, just as dormant volcanoes.

The early recognition of pulmonary tuberculosis is enthusiastically advocated. Yet, we do not know how frequently it is possible with such a wide difference of opinion concerning the methods that are most effective.

Among our recent methods of treatment is the air and rest cure. It has had its test of time. It must be admitted that the proportion of cases that can be restored to health, after all, is very small. The most reliable statistics prove that the lasting, satisfactory cures are scarce and the death rate of persons having had tuberculosis remains very high. We all know that if we have nothing else to offer our tuberculosis patients but the air and rest cure, we have nothing to boast about for the incipient cases only derive the greatest benefit by this method.

As to the immunological methods, it certainly has not stood the test of time and those who claim cures by tuberculosis vaccines are suffering from delusions. After a period of twenty years experimenting with a hundred thousand tuber-

culosis patients with vaccines, its adherent followers have abandoned its use and claim a very small percentage of help even in the incipient form of disease.

Let us consider for a few moments the chemotherapy methods. Quite a few workers have been busy in the past few years with new ideas using various compounds such as copper, gold and other metals; the various oils such as cod liver oil or chaulmugra and its derivatives, concerning which nothing definite has been brought to light. A temporary ray of hope came from Denmark in the use of a compound called sanocrysin. It has been tried under all conditions with all necessary precautions and in many countries by the greatest leaders in the medical profession. They have reported disappointments; consequently, its use has been abandoned.

And now a few words for artificial collapse, which is the greatest and most dependable in the recent advances of science and in treating tuberculosis. It is capable of abating most of the alarming symptoms and restoring those suffering from the active form of disease to a fairly normal state of health. At first, it could be applied only in a very small percentage of cases but the proportion has increased to a considerable degree and it is still on the increase due to the advancement in technique, interpretation of the Roentgen plates and our greater familiarity with the disease itself. Yet, it is not always successful.

Thoracoplasty, or its substitute, pneumothorax, has not proven its value and should be considered as such.

Truthfully speaking, there is no last or specific word in the treatment of pulmonary tuberculosis but we have a right to expect greater benefit from our most recent advance in the treatment of these conditions and we do know that in order to conquer tuberculosis, much more is needed than our present knowledge and methods of treating the human curse.

One of the first steps to be initiated would be the adoption of a plan of organization that would bring all the tuberculosis cases under the control of our government with established sanitariums for incipient patients, and hospitals for the advanced and hopeless cases, who cannot be cared for safely at their homes, thereby isolating fairly successfully those individuals who are consequently a menace to society. These various institutions should hold frequent meetings and report their progress in the research and treatment of this disease.

The Government should employ armies of trained men who are well equipped to carry on this research. They should furnish schools and make it possible for anyone who is willing to receive instructions in the diagnosis and treatment of tuberculosis, as it takes years of training to develop leaders in any profession, especially in the work of tuberculosis.

At the present time, there are insufficient beds in the sanitariums and hospitals. Dispensaries are few and scattered and the doctors are not sufficiently trained to recognize early tuberculosis, and as a result, only moderately advanced cases are admitted to tuberculosis institutions and in some instances, it requires political influence as the waiting lists are so great.

The government should employ educators to be sent out from these various institutions to educate the public as to the importance of recognizing and treating early tuberculosis. We know that education has been extremely limited and the various organizations have not sufficient funds to carry on the work satisfactorily.

There are organizations who send trained speakers to the various groups of business men to educate the public how to improve their business methods and their environment. It is just as important, if only from a business standpoint, to carry on the same campaign in the education of tuberculosis which is by far financially more expensive to the human race than any other business problem.

We incarcerate the mental cases; also, the criminals, who are a menace to society for fear that bodily harm may result by their freedom. Yet, the active tuberculosis who is the greatest menace to health and life, is permitted to be at large without taking the most strenuous and precautionary means for its abatement. Is it because the majority of the people do not understand the curse of this dreadful disease?

The government and state do not hesitate to spend millions of dollars for various improvements such as bridges, concrete roads and enforcement of prohibition or monuments to political heroes. Our philanthropists build museums and planetariums which are by far less important and if this relentless disease is not checked, all places of amusement and conven-

ences will not be of great benefit to the human race.

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PATHOLOGIC AND PHYSIOLOGIC DEATH

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Death presents perhaps the greatest mystery in the experience of mankind. It has ever been regarded with awe from the earliest times. Yet death is not so great a mystery when viewed in its true biological status. It is a supreme necessity in the present scheme of all life.

Death is the natural incident to evolution and because death has continuously eliminated the lesser forms of life the more complex have been possible. Had nature been satisfied with the monera as the final manifestation of life, the monera would have been immortal. But the monera was only the beginning of a means to an end, and through countless aeons it has evolved to more and more complex organisms, none of which, apparently, was the desired ultimatum in vital manifestation. Man, no doubt, is the most perfect product in the evolutionary scale at the present time, but he is not that perfect organism toward which nature has been striving. His role on the evolutionary process is, no doubt, much more glorified than the ape's, but he is by no means, the perfect organism. It is therefore, a vain attempt for mankind to attempt a permanent elimination of death. He must be willing to accept death as a thing naturally inherent in him.

There was a time on earth when there was no death, and that was prior to the appearance of living organisms and the advent of evolution. The ideal conception would be of a long period that followed, and which was characterized by an evolution of the simplest conceivable organism to the most complex and perfect, after which the evolutionary process shall cease, and with it, death. How long that period of evolution will be can never be known. Yet the perfect must some time be reached. This perfect organism will be the ultimate of ultimata in nature's striving for the perfect form. Its perfectness will constitute its deathlessness, and because it will be *the* perfect organism, there will be no need for it to die, for the evolution of life will have come to its final standstill.

It is, indeed, wonderful to speculate upon an organism so perfect that it is deathless, in view of the fact that the present expression of life is so imperfect that death in infinite variety so readily terminates it. The question of what life is has never been answered because it is apparently harder to define that which is incomplete and imperfect than it is to define something which is perfect. It is obvious, therefore, that the final definition of life will be possible only when the perfect expression of life makes its advent. How hopeless it is to define life at present is admitted by the fact that life is defined most completely in terms of death. The French encyclopedists of the 18th century defined life as that which resists death. This is by far the most complete definition in view of the fact that the perfect living form will effectively resist death. Dr. Roswell Park (Journ. A. M. A., vol. lviii, no. 17, April 27, 1912) has shown the hopelessness which confronts the modern investigator in attempting a definition of life:

"After death, the majority of cells in the previous living organism live on for hours, or for days, or under certain favoring circumstances retain potentialities of life for indefinite periods. Life does not inhere in any particular cell. Cells are capable of stimulated activity long after the death of their host. In fact, by suitable electrical stimuli, nearly all the phenomena of life may be produced saved consciousness and mentality alone. Do these then constitute life? Then, what of a trance or absolute imbecility? If life inheres in the brain, then what of the acephalous monster who lives for a short time after birth, or of the decapitated frog who lives for several hours? Is it then in the heart?

"If protoplasm be alive, then life inheres in the nitrogen compounds composing it, or else in an adjunct of matter, impenetrable, elusive, if undeniable. The life of a cell is necessarily quite distinct from the life of its host, nor can the latter be composed simply of the total numerical lives of its components.

"Some lower animals bear semi-divisions, in which case each half becomes complete by itself. The more highly specialized or complex the cell, the more easily does it part with life; the more difficult is its preservation. We may assume that, after the death of a man, the most specialized cells are the first to die; or more, that their death precedes his own. In the ante-mortem collapse seen in many diseases and poisonings, has not this very thing occurred? The patient has outlived his most important cells. Twenty per cent. of the cells are actually dead; the rest are bathed in a poisonous medium. Still he endures yet a little while."

Death, on the other hand, is somewhat easier

to define, because death in itself is complete and final. Of course, it is the hope of those who look optimistically upon the efforts of nature to arrive at her perfect living form that it will become increasingly easier to define life, and that the manifestations of death will ever become vaguer. At present, however, death is very real, more real than life, and its definition is therefore rather complete.

Death is a condition which begins at the moment when the mathematically harmonious and co-ordinating activity existing among the vital centers of the organism is completely disturbed. The essential cause of death is this complete disturbance, but in its nature it is twofold, there being that death which is pathologic (unnatural) and that which is physiologic (natural).

Pathologic death presents the greater problem, because it is so infinite in number and variety. Fundamentally, however, pathologic death is of three kinds: 1. mechanical death; 2. chemical death; 3. abnormal degenerative death. Mechanical death is brought about by a mechanical injury to the vital system, such as mechanical crushing of the organism. Chemical death is brought about by a chemical reaction or set of chemical reactions within the organism, producing a condition incompatible with the co-ordinating activity of the vital center. In such a case there is a substitution of the poison for the colloidal substance in the tissue. Thus in the case of poisoning by arsenic, each molecule of the poison substitutes itself for at least six molecules of ionized water of the tissues. The tissues, thus deprived of their normal chemical constituency, are powerless to function normally and if this condition be allowed to progress, death will ensue. Abnormal degenerative death is death brought about by the stimulated activity on the part of the conjunctive cells over the specialized cells. This is usually caused by disease with its toxins or the introduction into the system of poisons which are the factors of stimulation.

In the majority of cases pathologic death is scarcely ever purely a mechanical or chemical death. More often it is a combination of both, or in some cases of all three. The primary variations are: 1. mechanico-chemical; 2. chemico-mechanical; 3. mechanico-degenerative; 4. degenerative-chemical; 5. chemico-degenerative; 6. degenerative-mechanical. A mechanico-chemical death is death brought about by a mixed mechanical and chemical disturbance of the vital activity of which the mechanical cause predominates over the chemical one. In the same way we may define the other five of this primary variation.

The secondary variation consists of: 1. mechanico-chemico-degenerative; 2. chemico-mechanico-degenerative; 3. degenerative-chemico-mechanical; 4. degenerative-mechanico-chemical; 5. mechanico-degenerative-chemical; 6. chemico-degenerative-mechanical. A mechanico-chemico-degenerative death is death brought about by a disturbance of the vital activity, partaking of every one of the three natures of pathologic death, and in a proportion in which the mechanical predominates over the chemical, which in turn, predominates over the degenerative cause. Similarly, the remaining five of this final variation may be defined.

Pathologic death, which is so varied, may thus be conveniently classified. It is by far the more common of the two, and the majority of living organisms come to their death pathologically. While there may be some faint hope of eradicating physiologic death, pathologic death can never be effectively resisted by man.

Physiologic, or natural death, is the incidental result of cellular differentiation. Weismann's view on the advent of physiologic death is of some interest and importance:

"1. Natural death occurs only among multicellular beings; it is not found among unicellular organisms. The process of encystment in the latter is by no means comparable with death.

"2. Natural death first appears among the lowest heteroplastid metazoa, in the limitation of all the cells collecting to one generation, and of the somatic or body cells proper to a restricted period; the somatic cells afterwards in the higher metazoa came to the last several and even many generations, and life was lengthened to a corresponding degree.

"3. This limitation went hand in hand with a differentiation of the cells of the organism into reproductive and somatic cells, in accordance with the principle of division of labor. This differentiation took place by the operation of natural selection.

"4. The fundamental biogenetic law applies only to the multicellular beings; it does not apply to the unicellulaar forms of life. This depends, on the other hand, upon the mode of reproduction by fission which obtains among the monoplastids (unicellular organisms), and, on the other, upon the necessity induced by sexual reproduction for the maintenance of the uni-

cellular stage in the development of the polyplastids (multicellular organisms).

"5. Death itself, and the longer or shorter duration of life, both depend entirely upon adaptation. Death is not an essential attribute of living matter; it is not necessarily associated with reproduction, nor is it a necessary consequence of it." Essays Upon Heredity, vol, I, pp. 160-161.

Exactly what is the process of physiologic death in a highly specialized individual? There are several ways in which this process may be viewed. There begins, from the day of birth of the complex organism, a struggle between the primitive and specialized cells, and this continues throughout life. Disease, poisons, or tissue traumata may cause an overactivity of the primitive element (conjunctive cells) and hasten death, which in such a case will be pathologic. On the other hand, if there is an absence of abnormal excitation of the conjunctive cells and they continue to triumph over the specialized cells in a normal manner, physiologic death will result.

This activity of the primitive element tends to bring back all to a primitive condition, where each cell was sufficient unto itself. But the highly specialized organism is one where all are co-ordinated, and this leveling process is fatal. The conjunctive cells replacing the highly specialized ones are in no way capable of carrying out the highly organized and co-ordinating activity, and finally, there occurs a complete disturbance of the vital activity, and naturally death is the result.

This phenomenon of displacement of specialized cells by primitive ones occurs everywhere in the tissues—and the relation that these tissues bear to the vital activity affects the maintenance of life in a definite proportion. Thus, fatty degeneration of the heart is of greater concern than fatty degeneration elsewhere in the system. Primitive cells (the osteoclasts) multiply around the osseous laminae, whence they draw the pith of the bony substance. The muscles undergo the same degeneration, being invaded by primitive protoplasm (the sarcoplasm).

What is the normal duration of time consumed in the final culmination of the triumph of the primitive over the specialized element? Buffon claimed that the normal duration of time was six to seven times that of the period of growth, but he erroneously maintained that fourteen was the age at which growth terminated. Flourens properly fixed the age at which the process of growth comes to an end at twenty, at which age the bones have ceased their growth. Thus, the span of normal life is from 120 to 140 years.

We may now arrive at a definition of physiologic death from the point of view of the struggle between the primitive and specialized elements in the body of a highly specialized organism: Physiologic death is the final culmination of the triumph (unstimulated in their process by any cause whatsoever) of the conjunctive cells over the specialized cells, to bring about, by their unstimulated degenerative invasion of the vital organs, a complete disturbance of the mathematically harmonious and co-ordinating activity existing among them. Any deviation from this at once falls into the province of pathologic death.

Biological chemistry offers a supplementary explanation of the process of physiologic death. This process is one of deaquification by aggregation. This takes place in the ageing of all organic colloids, and is claimed to be the one which changes the organism from its embryo stage to senility and which finally ends in death. In the human species this process extrudes H_2O and defines the process of life from birth to natural death. Old age, expressed in terms of the biochemistry of senile degenerescence, is a certain stage of deaquification of the protoplasm of the tissues. This process of deaquification may be represented by the following equations:

$$Pm(OH\ H)n + Pm(OH\ H)n = 2Pm(OH\ H)n + n\,H_2O.$$

$$2Pm(OH\ H)n + 2Pm(OH\ H)n = 4Pm(OH\ H)n + nH_2O$$

(Pm(OH H)n represents the colloidal protoplasm of the human tissues, and Pm stands for the protoplasm).

Biological chemistry has brought down the definition of physiologic death to an expression with a formula. The more interesting problem would be to discover a formula or a series of formulæ to represent the vital process, and perhaps when any serious efforts will be begun along this line some very vital and interesting facts will be discovered.

166 Rockaway Parkway.

OCULIST OR OPTICIAN, WHICH SHALL IT BE? A DRAMATIZATION*

G. F. SCHEIB, B. S., M. D.

CHAMPAIGN, ILL.

Good morning, Jones. How are you?

Well, John, just fair; for the last month or two I am not one hundred per cent. I get a headache frequently, and in the evenings after reading fifteen or twenty minutes my eyelids get heavy and old "Somnus" gets me. Can't understand it! Get plenty of sleep! Wake up in the morning feeling fine; but along about eleven o'clock I begin to feel drowsy, and a dull feeling comes through my temples; my eyes ache and the lids burn. These uncomfortable feelings keep increasing in severity until about four or five o'clock, I feel tired and worn out, and I go home almost exhausted. These feelings make me nervous "Pepless" and irritable. The job of life is almost a minus quantity. I do not feel like playing with the children when I get home, a thing I used to enjoy so much; and things around the house annoy me more than in former days. My wife ascribes my impatience and irritable state to my business cares, but business routine is about the same as usual!

Well, Jones, that is too bad! Did you ever think that your eyes might cause all these troubles?

Yes, I did, and I have a pair of glasses here from John Smith, an optician on Jackson Street. Aren't they nice looking glasses?

Yes, the mountings are fine, but the real service to be derived from a pair of glasses lies in the proper lenses. That is, the lenses must correct the error of refraction, or in other words the eyes should be carefully measured by a competent oculist. And you say you saw an optician! Why did you select an optician for advice on so delicate an organ as the eye?

Well, Joe Green told me he got his glasses of "Dr." Smith and they did him fairly well.

Yes, note the word *fairly!* Jones, you should have asked your family physician for a dependable oculist. The capable and ethical family physian always advises the services of the eye physician, or oculist, for his clientele. At least my family physician strongly advised me against going to the optician or the optometrist. You know optician and optometrist mean the same thing. There is a difference between an oculist and an optician, though!

Is that so? What is the difference? I never thought of that; those terms oculist and optician have always confused me!

Well now, Jones, the difference is great, and sadly great sometimes. The oculist is an eye physician, and the laws of the state require him to have the degree of M. D. just the same as your family physician has his degree of M. D. The optician takes a course on refraction, or the fitting of glasses. He is not permitted by the state to treat diseases of the eye and his training does not include the fundamentals of the interrelations of eye troubles and the various diseases of the eyes to the general diseases of the body. The oculist is qualified to treat diseases of the eye and he is qualified to fit glasses with a method that the optician is not qualified to employ. The optician discourages the use of drops, but my family physician tells me it is the only way to get the correct lens for one's eyes. When the eyes are fitted without the use of drops that relax the accommodation, the optician must depend upon the patient's answers. These answers may be right and they may be wrong. But when the oculist uses the drops and the shadow test, the results are very dependable.

We have a girl in our neighborhood, a sophomore in high school, and she got a pair of glasses of an optician, a so-called "Dr. of optics"; a pseudo-title, by the way! The glasses did not relieve her headaches and she was slipping in her studies; she could not concentrate on her studies because of her eye discomforts. The fatigue produced by the effort of that little muscle of accommodation to overcome the error of refraction plus the added hazard of the minus lens caused a disinclination to mental effort with attendant bodily prostration. She had to be excused several afternoons each week from school because of the severe headaches—you know a severe prolonged headache will get the strongest down! She was recommended to an oculist and with the use of the drops he discovered that she needed a plus cylinder lenses axis 90 in each eye whereas she was trying to wear a pair of minus spheres supplied by the optician. The minus lenses aggravated her existing defect. So you see in addition to the suffering this girl

*This paper was awarded first prize in a contest sponsored by the Uhlemann Optical Company, Chicago.

experienced, there is an economic consideration in this thing of glasses. The girl's mother is a widow and her failure to receive any benefit from the first pair of glasses meant a total loss in money, as she had to have another examination by an oculist and additional expenditure of money for the right glasses. The last report from this girl is that her headaches are all gone and her grades are satisfactory to her teachers and she is happy in her school work; and you know, Jones, happiness in school work is beyond any monetary calculation.

Do you not believe, John, that many boys and girls never complete their school course because of handicaps due to poor vision or incorrect glasses?

Yes, I do. This girl is just one example of thousands! These children with eye defects lose interest in their school work because of the discomforts arising when they try to study with defective eyes. Poor lessons result and then punishments and humiliations that are sometimes worse than punishments follow and these children drop out of school, discouraged and sometimes disgraced, with their education just partially completed. And Jones! I want to give you another concrete example showing the difference between oculist and optician. And there are many similar cases! This case had a sad ending because of delay in making an early diagnosis. It was Mrs. Brown. She had eye trouble and she always insisted that if she had a good pair of glasses she could see well. And she placed emphasis on the word good. Isn't it strange that people cannot see beyond glasses when they have trouble with their seeing! They forget that the human eye is made up of delicate tissues that are subject to diseased conditions like other organs of the body, and sometimes disease in remote organs of the body are manifested in the structures of the eye. But it requires the training of an oculist to diagnose these troubles early in the onset of the disease, when prompt treatment will do the most good. Any mutt can diagnose blindness when one is blind. But what good does that do the victim? Well, Mrs. Brown visited a number of opticians over a period of two or three years. During all this time not one made a dignosis. How could they? They lacked training. Pathology of the eye was an unknown quantity to these pseudo-doctors of optics. Finally she came under the care of Dr. B., an oculist, an eye physician, and he examined her eyes very carefully with the drops and what do you think he found to be cause of her eye trouble? Well, Dr. B. told her it was not glasses she needed but she needed her family physician. The oculist found that the delicate tissue called the retina in the back part of the eye badly damaged due to kidney disease. The Bright's disease that Mrs. Brown had was the cause of her poor sight. Oculists tell me that when the retina of the eye becomes badly damaged or destroyed by kidney disease the patient lives about two years. Dr. B. told Mr. Brown the grave condition of his wife's eyes and the chances that his wife would not live more than two or three years. The eye findings were the local evidences of the degeneration going on in the kidneys. The fundus or back part of the eyes often serve as a bulletin board for pathological conditions in remote organs. But it requires ability and training to interpret this bulletin board. Her family physician gave her only temporary relief, and she died in about two years. Now, Jones, what we may learn in this Brown case is this: If Mrs. Brown's eye condition had been diagnosed three or four years earlier her vision might have been conserved and her life prolonged. She was a victim of incompetency and stupidity. I understand the oculist is often the first one to make a diagnosis of certain nerve disease, and other diseased conditions of the vital organs of the body by what he sees in the back part of the eye. Jones, what the people want or should have is an early and correct diagnosis. And that is the big reason that when you have a physical examination you should have a reliable eye examination also. The family physician and the oculist may work together all to the patient's benefit. Jones, here is another reason why you should consult an oculist. The able and honest oculist always wants to know all about your eyes, and if he finds that your eye trouble is due to systemic causes he consults with your family physician. He insists on a complete diagnosis. They tell me there is a little muscle in the eye that plays tricks sometimes, when one reads the test card. Now the oculist can fix that little muscle so that it can not make a mistake or tell an untruth and interfere with the eye findings.

How is that?

Well, the oculist drops some medicine in the

eyes which puts this muscle to rest, or relaxes it for several hours.

Yes, John, but those drops knock me out of my book work for a day or two.

Well, Jones, suppose you have to take a day or two off. What is that when you are dealing with that most precious sense, the sight? You must think of the results to be attained by proper correction. The oculist can give you a plus 3.00 or plus 3.50 D. lens to use while your eyes are under the influence of the drops and these lenses help out wonderfully!

There is one more reason that I want to give, Jones, for selecting an oculist rather than an optician, and it will assist you to see the difference between the oculist and the optician. Down at Washington, D. C., a vast amount of research work is done in the Health Department. Their eye physicians made careful estimates of the eyes of eighteen hundred and sixty children. They made careful examinations without the use of drops, and with the use of drops on all these children. And this research work brought these trained oculists to this conclusion: "The examination of the eyes and the fitting of glasses without the aid of drops are based on guess work." And these same oculists further say in Public Health Bulletin No. 182 page 11; "The preceding data on the results of Snellen tests before and after the use of Cycloplegic (drops) are of interest, but of minor significance as compared to the findings by retinoscopic examination." By retinoscopic examination we mean the shadow test after the muscle of accommodation is relaxed by the drops. These findings are authentic and dependable.

Well, John, your reasons, as given in these concrete examples, for seeing an oculist for one's eyes rather than an optician are the best I have ever heard, and they are sound. And that report by those research eye physicians at Washington settles the question for me. I certainly do not want any more guess work with my eyes! I shall call up my family physician at once for a dependable oculist.

Next morning: Well, Jones, I note you have seen an oculist.

Yes, John, and the oculist found that I had a minus cylinder of 1.50 D axis 180 in each eye by the optician, Smith, and the oculist tells me that I have a condition of mixed astigmastism and that I should wear a minus 1.75 sphere combined with a plus 2.25 cylinder axis 90 in each eye. My eyes are too long in one meridian and too short in the other meridian.

You see the optician could not find the latent error. He attempted to correct one meridian and let nature correct the other meridian.

Well, Nature does an awful lot for us human beings, but sooner or later she revolts. And in my case she certainly filed her bill of complaints. By the way, John, can you tell me what this latent error is?

Yes, Jones, it is the difference between the lens the patient accepts when he is tested without the drops, and the lens required to read the $\frac{20}{20}$ — line after the accommodation is relaxed by a reliable cycloplegic or drops. For example, A reads $\frac{20}{30}$ — with each eye, and with plus one-half D. he reads $\frac{20}{20}$ —. After the use of drops he requires a plus two D. lens to read $\frac{20}{20}$ —. The difference between one half D. and two D. is one and one half D. and this represents his latent error.

Oh, I see John. How simple it is after it is explained!

Yes, playing the piano is easy for you after you are trained to do it. This latent error the oculist is enabled to find with the drops and it is this latent or hidden error that stumps the optician.

Then, John, it must be the latent error that remains uncorrected that causes so much distress in people who wear glasses with only the manifest correction,—the correction given by the optician.

Exactly so, Jones.

Well, John, I am seeing the light, or better still, the truth in this delicate work of refraction or glass fitting. And this truth has set me free; free from the ignorance of the propaganda that it is not necessary to use drops in refraction: the misrepresentations given out by the optician, because the law does not permit him to use drops.

Oh, Mr. Jones! There was one thing I should have suggested to you when we were talking

yesterday about selecting an oculist. It is this: when you get your prescription from the oculist it is equally important that you have your lenses made by a dependable and reputable manufacturing optical house or dispensing optician. Such a high class house employs very scientific artisans in the making of lenses. And their machinery equipment and all material is of the very best. The manufacturing optician or the dispensing optician stands in the same relation to the oculist and the patient as the pharmacist does to the family physician and his patients. The pharmacist compounds the prescription according to the physician's orders. So the manufacturing optician should do very accurate work in grinding the lenses and measuring and fitting the frames. This is important, Jones, and if the optician does not do his work accurately, the work of the oculist is disappointing: the patient is not pleased. The oculist is blamed sometimes when it is the man who fills the prescription that is the aggressor. Moral. Seek the best!

Yes, John, that is good advice and I am happy to say that I went to one of the most reputable houses for the filling of my prescription.

Well, see you in the morning! Goodbye!

The next morning found John and Mr. Jones ready for their day's duties. Jones had his new glasses checked up to the requirements of the oculist's formula,—a very wise thing to do!

That night when they left for home Jones said to John:

It certainly is a happy surprise to me that I am leaving the office entirely free of that pepless, tired feeling so common to me every evening for the past month or two. Can it really be that these new lenses are the cause of all this?

Certainly, Jones. Oculists inform me that the reflex disturbances from errors of refraction, or from incorrect lenses are legion. One would not believe the immediate and remote effects of eye strain! But careful medical men note these clinical findings.

When Jones arrived home that night his wife was surprised to meet her husband with a cheerful expression.

You do not appear so tired out tonight! You must have had a light day.

No, wife, I did more work today than usual; but I can tell you this; I was free from that awful headache today, and that alone is plenty of reason to make me feel happy.

What? No headaches today?

Yes, wife, and do you know that my new glasses are preventing those terrible headaches.

Well, husband, it is certainly a revelation to me; the different husband you are since you have the correct lenses. I think the court of domestic relations should send these irritable husbands and wives as well, to a good oculist. He might be able to keep the clouds out of the domestic horizon!

That is a mighty good suggestion. Suppose you recommend a visit to the oculist for these nervous irritable friends of yours. You might be doing them a real service by your suggestion.

Say, husband, do you really believe that the use of the drops and the shadow test is the best method to examine the eyes?

Yes, indeed, I do. If you are looking for accuracy in diagnosis, it is absolutely essential. The lens you wear signifies the diagnosis of your refraction. In the case of that high school girl that John reported—she was wearing a minus lens which means a diagnosis of myopia or a near sighted condition, whereas the oculist found hyperopic astigmatism which means a far sighted condition. There you see the difference in diagnosis; and there are thousands of cases like this. Wife, after going through the experience that I have for the past two months, I can assure you that I am forever through with this guessing business in matters pertaining to those delicate organs, the eyes. If you or any of the children need attention to your eyes, keep away from those pseudo-doctors, the opticians. They advertise free examinations, but that is a bait for the unsuspecting, the innocent public. It may prove a very expensive experience. Better pay a fee for a correct diagnosis for real professional service, rather than buy a pair of glasses without a diagnosis. You will be ahead in the end!

I believe you are right, husband. Mrs. Curley has just had an experience with her little son, Rex. His teacher sent a note home to have his eyes examined. Without consulting her family physician she took Rex to one of those opticians. She called him "Dr. Bluff" on Main Street. You know they try to dignify themselves by "Doctor of Optics."

Well, wife, do not let that pseudo-title

stampede you into thinking a "Doctor of Optics" is an eye physician or an oculist. There is as much difference as day and night. You might just as well tag yourself "Doctor of Cooking" or "Doctor of Sisters of the Skillet!" Just as much meaning or sense to it!

Well, to get back to my text. Mrs. Curley took Rex to that optician who runs a jewelry store in connection with his optical business, that "Dr. Bluff," and he had Rex read the test card; he read the $\frac{20}{-}$ line easily with each eye. And this jeweler optician assured Mrs. Curley very politely and very positively that Rex did not need glasses and that his eyes were perfect. He made this superficial diagnosis, which later proved to be a very poor guess, simply because Rex read the $\frac{20}{-}$ line of the test card. Well, "Dr. Bluff" charged Mrs. Curley $3.00 for this pseudo-diagnosis. And she was lucky at that. It could have been worse! Well, Rex goes back to school and in a few days another urgent note from the teacher stating that there was something wrong with Rex's yes. So, Mrs. Curley consulted her family physician, reciting her experience with "Dr. Bluff." Her family physician assured her that the fact that Rex could read the $\frac{20}{-}$ line did not mean that he was free from an error of refraction. "It is true he can read the required line," the physician said, "but we do not know how much latent error his muscle of accommodation is overcoming to read the $\frac{20}{-}$ line. Mrs. Curley, you can hold a fifteen or twenty pound weight out straight with your arm muscles but how long can you do it before your arm gets tired? The same principle applies with the eye muscles when they are held taut in order to see distinctly with the handicap of an error of refraction." Mrs. Curley's family physician referred her to an oculist and he found that after that little muscle in Rex's eye was put to rest with those drops you spoke of, he could only see the number 3 line or $\frac{70}{-}$ on the test card: $\frac{20}{-}$ indicates normal. This proved that Rex had to strain that little muscle of accommodation an awful lot all the time to see distinctly. And it had to give it up in this effort; hence, the symptoms, and the reason why the teacher was sure there was something wrong with his eyes. And she was right in her convictions. Well, Rex is wearing his lenses and his teacher reports that he is doing his work well.

Say, wife, I made a check up on that jeweler optician that told Mrs. Curley that Rex did not need glasses.

And what are the findings, husband?

Why, he is one of the members of the State Board of Optometry.

What does that mean?

Well, he examines candidates for license to practise optometry.

And he not cognizant of the latent error? Isn't that a joke!

No, wife, it is not a joke! It is more like a tragedy! It is too serious a matter to be passed off as a joke! The great State of Illinois should not license any but eye physicians to care for the human eye. Mrs. Curley should thank her stars that she squandered only $3.00. Just think what I paid Smith for my first pair of glasses! And think of the added torture and unhappiness I had to endure for two months, and the anxiety my irritability around home caused you. Let me tell you it is a shame that these pseudo-doctors are permitted to prey upon the innocent public. The pity of it is, wife, that so many people do not really know the difference between an oculist and an optician until they get their lesson by experience as I did, and those cases that John told me. Let me tell you, wife, there is one diploma of experience that is worth all it cost me. And if one does not profit by his experience he turns his best schoolmaster out of doors! Wife, it looks to me like this guessing business in glass fitting is a relic of the Middle Ages. In view of present day intelligence and advancement in the science of refraction, society has a right to demand the very best that medical science can give. It is a matter of education. The sponsors of this dramatization merit the thanks and support of the people. Wife, I cannot refrain from again speaking of my satisfaction with my new lenses.

The energy that I had to expend in trying to see with those ill-fitting glasses the optician prescribed for me was such a drain on my nervous system that I have been coming home for the past month or two all fatigued and irritable; but tonight I feel like a different man.

I certainly see a change for the better in your behavior!

Jones played with the children until dinner was ready, and after another round with the children after dinner he read until ten o'clock without any discomfort.

Next morning Jones met John at the office and again thanked him for his interest in his eyes and for his advice in selecting a competent oculist.

Such cases like that of yours, Jones, can be duplicated thousands of times from the careful records of oculists all over the state.

Conclusions:

Improper correction of refractive errors is common. It does not require effort to become careless.

Improper refraction affects efficiency in education and in industry. It is an economic problem.

Every candidate for correction of refractive errors is entitled to a correct diagnosis. Hence the physician's fee.

Correct refraction is constructive and conservative in its ultimate results. It is an asset.

Inaccurate or improper refraction is destructive of comfort and happiness and becomes a liability to the victim of careless refraction.

Cycloplegics (drops) and retinoscopy (the shadow test) are essentials in correct refraction. It takes the guess out of glass-fitting. This method is dependable and scientific.

PRIMARY UNION IN EXTERNAL PERINEAL URETHROTOMY

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The recent storm centered around the persistent cry of the "High Cost of Medical Care," which should more properly be termed the "High Cost of Being Sick," together with a second factor to be discussed presently, prompts me to make this report. The glamor associated with so catchy and popular phrase or slogan draws those would-be martyrs within its radiance just as the light attracts the moth.

The second factor is the time element in hospitalization of certain types of cases of perineal section. The average post-operative hospitalization and healing of perineal fistulae following external perineal urethrotomy will vary between three and four weeks, with an occasional fistula persisting for longer periods of time, even requiring subsequent plastic operations for repair. The prevalent custom, with few exceptions, is to drain the bladder with a perineal tube following perineal section for stricture. In selected cases during the past two years I have depended entirely upon urethral bladder drainage, e.g., a large urethral catheter passed through the meatus into the bladder and the perineal wound closed without drainage or only skin drainage; in this manner obtaining primary union and reducing the patient's post-operative sojourn in the hospital to twelve or fourteen days which could be further reduced if one did not care to see the patient daily for instrumentation. This method is applicable only in properly selected cases.

The incidence of urethral stricture is noticeably less under present day treatment of urethral affections than formerly when treated with irrigating and escharotic drugs. Nor do we see such a large percentage which are neglected until terrifying complications present themselves.

The management of strictures of the urethra is a fascinating one for the urologist, because in the care of these cases the surgeon constantly carries a trump card up his sleeve, or in other words, if one procedure does not work he can draw another from his bag of tricks. A stricture by which an instrument can be passed; whether of large, medium, or small calibre, that does not lend itself to gradual dilatation lays itself liable to operative interference, regardless of its location, just as readily in either the anterior or deep urethra.

A small calibre or filiform stricture in any portion of the urethra may respond with gratifying results to gradual dilatation; but more often than not, they are better treated by surgery with subsequent dilatation. The uncomplicated ones in the anterior urethra are repaired by internal urethrotomy. Indeed, those in the deep urethra may be handled in like manner; but are better managed by external perineal

urethotomy, thus avoiding a rather blind operation with danger of hemorrhage, infection and injury of tissues better left uninjured.

In the impermeable or impassable type, wherein no guide can be passed into the bladder, one of several things may be done. The injection of methylene blue, in my hands and in cases I have witnessed, proved more of a nuisance than an aid. It is just as liable to seep through false passages as the true urethra and ordinarily messes up and practically obscures the field of operation. This where a clear field is of paramount importance. An external perineal urethrotomy without a guide is the procedure of choice. In the vast majority of cases a skillful and careful dissection will enable the surgeon to find the urethra, incise the stricture and with a gorget follow the urethra into the bladder. After which, if indicated, further attention may be directed to the stricture and repair of the urethra. In the rare instances where one is unable to enter the bladder in this manner, a supra-pubic retrograde catheterization through a trocar may be done, in which case the perineal operation is carried out in the same manner as with a guide; or a supra-pubic cystotomy with retrograde catheterization may be carried out in order to secure the urethral guide.

There are several methods of draining the bladder following an external urethrotomy which may be used, in fact, are used. The most common are: a large perineal tube, or perineal tube and urethral catheter. A much less common procedure is by a large urethral catheter only. Young[1] is one of the few who employ urethral drainage only. This manner of drainage and closure is suitable only for the non-infected type and in the absence of hemorrhage. He says:

"A large catheter is then passed into the bladder through the urethra and the soft tissues are drawn together, fairly tightly, around the catheter with a continuous cat-gut suture. The perineal fascia is approximated by a similar line of suture, and the skin and subcutaneous tissues are closed completely, except at the anterior angle, where a small superficial pack is inserted for drainage of the skin wound. The catheter emerging from the meatus is fastened in place and mild antiseptic treatment of the bladder several times daily is carried out to prevent infection. The catheter is left in place for about a week unless suppuration or irritation requires early removal. Thereafter urethral dilatation with sounds should be carried out beginning about the twelfth day and repeated once every four or five days until cicatrization is completed and a normal large urethra insured.

"The rapidity with which the urethral mucous membrane will cover a defect after extensive excision of scar tissue is remarkable. This natural replacement is so effective that the extensive plastic operations which have been described by Marion, Cabot, MacGowan and others are rarely necessary. Likewise, complete resection with end-to-end anastomosis of the urethra has little or no place in perineal surgery, with the possible exception of those cases of extensive scar tissue formation following rupture of the urethra and other traumatisms in which the ends of the sound urethra, anterior and posterior to the strictured area, are so widely separated as to render the restoration of continuity by natural processes extremely improbable.

"Recently MacGowan has published and described a very extensive plastic operation upon the urethra. We have had no experience with such procedures, nor have we found them necessary."

Chetwood[2] uses a perineal tube and says: "In the simple and uncomplicated cases, this tube can be removed in twenty-four to forty-eight hours." Ballenger[3] thinks: "The perineal wound should be brought partially together by sutures of catgut or silkworm gut and then packed with iodoform gauze." The late Guiteras[4] used a perineal tube and later substituted a urethral catheter which he removed every second day in order to pass sounds.

Keyes[5] uses a perineal drainage tube and appears to be partial to supra-pubic drainage and small sized tubes and sounds. In Cabot's Urology[6] he advises removal of the perineal tube in twenty-four to forty-eight hours.

I feel that in properly selected cases there is a definite percentage in which one can dispense with the perineal bladder drainage and rely with safety upon draining the viscus per urethram. Realizing that the majority of external urethrotomies one is called upon to perform are not safely handled in the foregoing manner, in that event I follow the prevailing local custom of inserting both a urethral catheter and perineal tube into the bladder. To further healing of the urethra, the catheter is left in place until one is forced to remove it because of irritation and infection. This is generally about the end of a week. The day following the removal of the catheter, a sound is gently and patiently passed into the bladder. This is repeated with increasingly large instruments daily or every second day depending upon the local conditions present in

the individual case. Much has been said about frequent irrigation of the bladder, some advising several irrigations daily, in order to keep the bladder free of blood clots and infection. My experience has been that with careful dissections and careful handling of the tissues, together with the use of as large catheters and tubes as can be used, there will be little cause to worry about troublesome clots forming in the bladder.

An infection, not infrequently, is the result of too frequent bladder irrigation. It is probably less harmful to irrigate too seldom than too often. A lavage daily or every second day is quite sufficient in the ordinary case, while multiple daily irrigations are very likely to carry infection into the bladder and operative wound.

Those surgeons who advise waiting from several days to two weeks after removal of the perineal tube or urethral catheter before passing sounds must certainly be dealing with a different class of patients than I; or they would very likely be unable to pass any urethral instrument into the bladder. The day following the removal of the urethral catheter, a sound may be passed with little or no difficulty. However, the difficulty increases with each elapsing day since, as previously stated, replacement and repair takes place remarkably fast. The lumen is narrowed and false passages made in the soft granulating tissues with but little force although extreme diligence and care are exerted.

In the management of these cases, one constantly bears in mind a classification determined upon the presence or absence of active infection. The word active is used purposefully. In the former are the cases of urinary extravasation, urethritis, peri-urethritis, prostatitis and peri-urethral abscess. The latter type is distinguished by the absence of any of these complications. It is extremely improbable that there will be an absolute absence of any infection whatever, but rather that the individual has accustomed himself to a low-grade infection; or has developed an appreciable immunity to it, so that there is no longer an active process, rather a low-grade or attenuated infection.

It is needless to remark that perineal drainage should be instituted in the frankly infected cases. One is occasionally mistaken in the selection of cases, and in the absence of a perineal tube, infection of the perineal wound takes place, which however, offers no great obstacle to the patient's recovery if recognized early and properly cared for. The remark in a former communication[7] "each case is a distinct entity and should be so considered" is especially applicable here, as success or failure depends entirely upon the proper selection of cases. Greater judgment is required in this particular than skill in the technical procedures of the operation.

CONCLUSIONS

1. Perineal drainage may be eliminated in properly selected cases.
2. The hospital stay of a definite percentage of these patients can be materially reduced.
3. In this group hospital expenses are reduced.
4. The injection of methylene blue to enable one to find the "true passage" is of questionable merit.
5. Careful dissection and employing large drainage tubes reduces clot formation, and reduces the necessity for multiple daily irrigation.
6. The less frequent the irrigation, the less danger of infection.

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ASPECTS OF MEDICAL QUACKERY*

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In attempting to make a study of the problem of medical quackery we must first find a suitable definition for the term with which we are to deal. Let us then agree to designate as quackery every attempt to deviate from the established methods of medical practice or medical ethics with the view to benefiting the practitioner rather than the patient or the profession at large.

Permit me to elaborate on this definition. The practice of medicine consists in the diagnosis, treatment and prevention of disease, and in-

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cludes all the activities which these processes entail. At any given time certain methods and opinions are held to be correct, and are currently accepted by the majority of men in medical work. The activities that correspond to such methods and opinions in general circulation constitute regular practice. Such activities follow the common rules; they are in harmony with what is authoritatively established and approved; they are in accord with what is customary and conventional. Practice that does not derive from common rules, that departs from the general course of a given time, is known as "irregular" practice or *quackery*.

We may safely divide irregular practitioners into two groups: "good irregulars" and "bad irregulars." Under "good irregular" medical practice we may include such forward steps in medicine as are found in improved chemotherapy, in immunotherapy, that is to say, preventive medicine, in organotherapy, or treatment on the basis of such knowledge of a reliable nature as we have of the endocrines (thyroxin, adrenalin, pituitrin, etc.), and finally psychotherapy, or such methods in the mental treatment of the abnormal as are practiced by psychiatrists. Such departures as are made in these fields, on the basis of ever-growing knowledge, must be recognized as good irregularities. There are those among us, of course, who do not favor one or another of these methods. But the use of any of these methods would not constitute quackery for the following reasons: (a) it does not necessarily harm the patient (b) it is not intended to lower the standards of legitimate medicine, and (c) it does not necessarily aim at the exploitation of the patient for monetary gain. It goes without saying that, should any of these methods find lodgment in the hands of a totally incompetent charlatan, these commendable advances in medicine would immediately change from a possible benefit to an unthinkable danger to both society and the profession which we represent.

"Bad irregulars" are then those who adapt any of the recent discoveries or improvements in the field to their uses. Under this heading we must also include those who attack the credulous public through the use of magic and mysticism. Here belong witch-doctors, herb-doctors, magnetic healers, and all charlatans from the crudest type of blatant swindler to the subtlest, most persuasive advertiser of patent-medicine nostrums, mineral-spring water cures, queer diets, tuberculosis cures, cancer cures, drug-addiction cures, manhood restorers, mechanical manipulators—including chiropractic trickery, electrotherapy, and more of this kind who deceive even the more sophisticated and skeptical of our folk and kin.

"What diseases do medical quacks specialize in?" my colleagues often ask. It is safe to say that there never was a case where a quack declined to treat a disease. Quacks go farther than this, however, and assume control, allegedly medical, of neurasthenics whom they persuade of being ill, when very often the opposite is true. Unlike general practitioners, quacks make no outside calls, or do so at extremely rare intervals, confining their practice to the office. It may be said, however, that the following classification holds true by and large:

In men—Venereal diseases (chronic and incipient cases), gastro-intestinal complications, sterility, sexual impotence, hernia (therapeutic cure), neurasthenia, and "the smoking habit."

In women—"Women's diseases," venereal diseases, neurasthenia, "worms."

In young men—Masturbation, venereal diseases, and other disorders attributable to the genito-urinary system.

It will be readily observed that the quack does not venture into such branches of medicine or surgery as require elaborate scientific research, offer little or no chance of deception, and presuppose expert erudition and training.

There are three aspects to the problem of quackery: the scientific, involving diagnosis and treatment; the economic, which involves both the financial condition of the patient and the income of the regular practitioner, and the social, affecting the welfare of the group. Let us take these up in the order given.

We all know that years of practical experience and theoretical study are required to understand the physiology and pathology of the human organism. How, then, can quacks, men who have had, in most cases, no medical education whatsoever, make a conscientious diagnosis and employ suitable treatment? It is not to be wondered at, therefore, that the treatment given by these totally unqualified men and women results in unbounded suffering and a thoroughly alarm-

ing incidence of death. For who is the pseudo-scientist called "quack?" He is but one of a group of unlovely and by no means select circle of charlatans embracing the manufacturers of "cure-alls"—those marvelous nostrums, a few bottles of which will cure all the ills known and unknown to mankind—and the "cultists," those seers of the invisible and unknowable and unthinkable, whose curious methods and pretences to omniscience also proclaim their unlimited power to overcome human ailment—and the various "doctors" who are, by trade, druggists, barbers, midwives, pseudo-chemists, and so on through the amazing list.

All these levy their heavy toll upon ignorance, for ignorance is the foundation of every business edifice on Quack Street.

Then there is the economic side of the question. Sharp-eyed for money, sharp-eared for the careless words of his dupes which may lead him to a proper diagnosis of his patients' financial condition, the quack is singularly blind and deaf to human pain. Indeed, that the dupe who strays into Quack Street has no disease means nothing to the quack. The victim is promptly supplied with one of an imaginary nature, or else with a genuine condition due to "treatment" given him.

When the dupe who is unfortunate enough to stray into Quack Street is actually diseased, he presents a still greater tragedy, for the more serious the disease the more serious the usual consequences. And when reputable physicians cry out against the practices of these unscrupulous people, the quacks often retort with a far louder cry of "jealousy" and "fear of losing practice." The fact is that the reputable physician suffers little economically from the practices of quacks because his services are usually in the end called on to undo the evil done. It is not merely "economic pressure," therefore, that actuates the legitimate practitioner in his battle against quackery, but his feeling for humanity to whose service he has dedicated his life.

Dr. Arthur J. Cramp, director of the investigation and propaganda department of the American Medical Association, conservatively estimates that the American public spends around $200,000,000 yearly for patent medicines and nostrums of all kinds. From another source the estimate is suggested that the annual quackery bill of the nation could be put up to $355,000,000 or more. How can such conditions, in a civilized country, be permitted to exist? One answer is the laxity of the laws. The legislative committee of the Illinois State Medical Society, headed by Dr. J. R. Neal, is even now engaged in the promotion of bills which will put the cult-exponents who have invaded our profession under more stringent control. To quote from a recent publication of the committee:

"Bidding for full legal equality with the medical profession, the cults have descended upon the Legislature this year in a desperate and determined effort to radically lower the standard of medical practice in Illinois. If not to lower medical standards to the level of their qualifications, why do they ask for new laws? The approach to medical practice under the present Medical Practice Act is wide open to all who qualify."

The committee is now particularly concerned about curbing some osteopathic bills which are before the legislature and threaten to go through. But to quote from their publication once more,

"In addition to the four osteopathic bills there are now pending in the Legislature six naprapathic bills, two chiropractic bills, a physiotherapy bill, and two vicious mid-wife bills."

Of course, enlightened public opinion *does* exist, and there are intelligent governors and legislators who will not allow quacks, nostrum-vendors, and half-educated cultists to perpetrate their tragic jokes on the community. Let me refer to the recent veto by Governor Buck of a bill to create a board of chiropractic examiners to "regulate" chiropractic in the state of Delaware. In returning the bill to the legislature which had passed it, the governor added this intelligent comment:

"The purpose of the act, as I understand it, is to legalize the practice of chiropractic in this state. Practitioners of this cult are not recognized now. Do they profess to be doctors in the same sense of the term as is commonly understood to apply to men and women of the medical profession?

"In so far as I am able to determine, there is not a recognized medical school in the country that includes in its curriculum a course in chiropractic. This fact in itself seems singularly significant.

"Even to the lay mind the idea that all disease of whatever character is due to spinal displacements of a mild sort, and that cures of such ailments as tuberculosis, smallpox, diphtheria, scarlet fever and others can be effected by manipulations and fingering of the spine is preposterous.

"Before returning this bill to you I have satisfied myself that the training and education a chiropractor,

or drugless healer, needs to practice his art does not fit him properly to advisedly treat the sick, inasmuch as he is not qualified to diagnose ailments nor recognize communicable diseases and to take measures to control them. He is therefore an opponent to the department of health.

"Wherefore it seems to me that it would be inconsistent for the legislature to appropriate, as it will do, money for the state board of health, which board is trying to eradicate communicable diseases, and at the same time legalize the practice of a cult which does not believe in the germ theory of disease, but does teach and believe that such diseases as scarlet fever, etc., are due to a distracted vertebra and the method to prevent and cure such disease is to see that everybody has a normal spine."

Yet legislation alone will not produce desirable results. I say not alone, because it is undoubtedly necessary to have legislation before we can have enforcement. But enforcement—by judges and police—is absolutely essential in the end. Let me quote a case cited in the Journal A. M. A. for January 17 of this year:

"W. A. Ford, formerly a Pullman porter, pleaded guilty, Sept. 25, 1930, in Judge Fetzer's court, Chicago, to a charge of practicing medicine without a license, on complaint of the Illinois Department of Registration and Education. Inspectors of the department presented evidence to show that this man had taken the name of a former Chicago physician, Dr. Walter Ari Ford, now of Sheboygan, Wis., who appeared as witness. According to their report, the impostor not only prescribed, diagnosed and acted as surgeon but also wrote narcotic prescriptions. Ford was fined $100 and sentenced to thirty days in jail. Shortly after, the department learned that the judge, after consultation with Ford's lawyers, but without notifying the department, had agreed to vacate the sentence and fine Oct. 21, 1930. An inspector visited the court on that day, but the hearing was postponed to October 28. When the inspector appeared in court on the latter date, Ford's lawyer asked for a continuance, which was granted to Nov. 5, 1930. At this hearing inspectors insisted that evidence be presented to show why the fine and sentence should not stand. Such evidence was not presented, it is reported, but the judge dismissed the case with the decision: 'Fine and sentence suspended and probationed for one year.' Ford had been indicted by a federal grand jury on a charge of selling narcotics without being a licensed physician."

If the battle against quackery is to prove a success, the mass of the foreign-born, which constitutes so large a proportion of the country's metropolitan population, must be educated to the peril with which they are ever confronted—the quack. Of all the means employed for the purpose of reaching the great majority of these foreign-born, the foreign-language press is the most suitable. The foreign-language newspapers have the situation in their palm. It is they who can sound the death knell to the charlatans, if they so desire, by excluding objectionable advertisements from their columns. Most unfortunately, the foreign-language press has not as yet succeeded in turning from the lure of ill-gotten gold to the cause of working for the benefit of their co-descendants and countrymen.

As chairman of the Committee to investigate quackery, appointed by the Douglas Park Branch of the Chicago Medical Society, I sent a letter to editors of 250 foreign language newspapers, each of which had a circulation of between 30,000 and 250,000, and could well afford to discard fraudulent advertising, urging them, for the benefit of their readers, to discontinue the publication of all matter which is designed to take advantage of the ignorance of the foreign population. It is a most regrettable fact that out of these 250 pleas only twenty-one were answered, 90 per cent. choosing not to answer, and so admitting their guilt with something like equanimity. They have substantiated the fact that they would rather serve as conscious factors in spreading the evil of quackery than lose lucrative income derived from quack advertisements. This fact is especially significant because the foreign masses, having come from lands where newspapers are the sole disseminators of knowledge, depend to an almost unbelievable degree on what they read in the newspapers or journals published in their native tongue. However, I feel that the recent crusades against quackery instituted by the English newspapers, notably the *Chicago Daily Tribune,* will in time, persuade the editors of the foreign press that for the benefit of their countrymen they should maintain a strict censorship over all advertisements of medical practitioners and patent medicines.

Much more remains to be done. Personally I have given much thought to this problem and have consulted directly and otherwise many men prominent in our profession and known to be interested in the welfare of society. After considering the problem from various angles, we have arrived at conclusions which I have decided to embody in one consistent program, aiming to accomplish the desired end in the anti-quack movement. This program has been worked out in collaboration with physicians and social work-

ers after some strenuous debating on the pros and cons of the subject, and is summed up in the following suggestions:

1. The practice of medicine or any branch of it should be limited to graduates of colleges recognized by the American Medical Association or the United States Public Health Service. This would naturally eliminate Chiropractors, Naprapaths, Christian Scientists, midwives, as well as many others who claim to pursue medicine as their "natural vocation." This will also bring as a consequence legislation classing medical quackery with other criminal offenses.

2. Before a prospective physician may be entitled to practice medicine he should, in addition to graduation from a recoginzed medical college, have passed a comprehensive examination demanding a thorough knowledge of the fundamental branches included under the general concepts of medicine and surgery.

3. Druggists should be prohibited from selling drugs or remedies other than those approved by the American Medical Association or asked for in the prescription of a registered physician. It is indeed surprising how this unfortunate condition has been allowed to linger in our midst. The laws governing such sales are extremely lax, and little or nothing has been done by the medical societies or boards of pharmacy to check them.

4. Quack advertisements, literature and samples of all kinds should be excluded from the mails, unless accompanied by a permit from the A. M. A. or addressed to a doctor of medicine engaged in practice. It is entirely obvious that it is the duty of the federal government to protect the health and wealth of our citizens in this manner.

5. The medical profession should be properly represented in our national and state government. If we have a secretary of agriculture who, among other things, protects the lives of our hogs and cattle, there is surely no reason why we should not have a secretary of public health as a member of the cabinet, whose duty it would be to protect the lives of the inhabitants of our country.

According to statistics, forty years ago typhoid fever claimed by death two thousand individuals in Chicago, which at that time had a population of about a million people. In 1930 with a population of almost three and a half million it claimed only twenty lives in one year—in one city alone. Similar figures can be cited in regard to such diseases as diphtheria, tuberculosis, and many others. Who brought about these changes? Chiropractors, Osteopaths, or any other "cultists?" Although it means a loss of millions of dollars in income derived from treating patients afflicted with these diseases, the regular medical profession of the city of Chicago unselfishly and energetically came forward and insisted upon a pure-water supply which resulted in the prevention of much illness and the saving of thousands of lives. Can anyone point to any other group of men doing as much for the community?

The practice of medicine has been altogether too much abused and only an earnest effort to co-operate with the public in bringing about the ultimate downfall of the quack will remedy the evil which threatens to become more than a nuisance to us. Such an effort means organization. Organization for this purpose must take the form of co-operation with the educational agencies of the existing societies, national and state, and it means furthermore, the establishment of a state-wide and, ultimately, of a nation-wide bureau supported and headed by a group of medical men, for the purpose of investigating and reporting the activities of quacks. We must have complete statistical data on these activities; we must have a sufficient collection of cases to establish the methods—various and sundry—employed by quacks in ensnaring their gullible patients and in treating them; and we must provide for the dissemination of such knowledge as this bureau would collect and prepare for popular consumption and for the use of the profession.

Assume that a million-dollar co-operative advertising campaign by organized medicine educating the public against quackery, would reduce this waste 25 per cent. and turn that much revenue into legitimate channels. The result, you realize, would allow each practicing physician a yearly increase of $683.00 less $10.00, his share of the campaign costs, and what is more, a net income of about $8,000 within three to five years. I consider such an undertaking essential to our welfare, most important for the welfare of the community, and a real challenge to the quacks

themselves who, forced into legitimate pursuits will either bring upon themselves deserved repute as public servants or will all the more quickly place themselves in the jails and penitentiaries of our land.

To the end that such an institution be created, for the first time in this state, I invite the unqualified co-operation of every member of the profession. Too many physicians have thus far been indifferent to this important problem. It is the duty of every practitioner to see to it not only that the high standards of the medical profession are maintained but that those who ignorantly attack our methods, and the knowledge accumulated through centuries of painful effort and at great personal risk by our predecessors, are properly dealt with.

SUMMARY

1. Quackery is a form of parasitic existence which our profession has had to combat for many years as a scientific, social and economic evil.

2. Quackery is not to be confused with "good irregular practice" which aims to introduce new methods of therapy and prevention into the practice of medicine.

3. Quacks specialize in every disease; they are omniscient and all-powerful and cure (?) even diseases which no regular practitioner would ever undertake to cure.

4. Quackery costs the American public from two hundred to three hundred and fifty million dollars yearly. Such an expense is not to be disregarded even if we do not consider it legitimately ours.

5. The laxity of our laws, uninformed and indifferent public officials charged with the responsibility of enforcing such laws as do exist, the general ignorance of the population—particularly the foreign-born element, and finally, the wayward and selfish conduct of the press, especially the foreign-language press, constitute the chief causes of the situation as we find it.

6. The methods of control suggested are: (a) the practice of medicine to be limited to graduates of regular colleges of medicine, so as to exclude all cult institutions of whatever character; (b) the selling of drugs to be permitted only on prescription of a licensed physician; (c) the mailing of medical literature or sample medicines to be prohibited unless approved by the A. M. A. or addressed to an M. D.; and lastly (d) the foundation of an institution, state-wide in character, but later nation-wide, to study and disseminate knowledge about, and help to eradicate through efficient propaganda the quacks who infest our country, harming both the population and our profession.

DISCUSSION

Dr. Arthur J. Cramp, American Medical Association, Chicago: Before discussing Dr. Krasnow's paper I want to take this opportunity of telling those here that don't know the fact that some fourteen years ago Dr. Krasnow did a most valuable piece of public health work in attempting to clean up the quack advertising in the foreign-language press in Chicago. At that time he felt, as he admitted, that he had accomplished but little because the papers didn't seem to pay very much attention to the work that he was doing. But his work made a powerful impress and led to a cleaner press.

In discussing Dr. Krasnow's paper, I have to take exception to his definition of what constitutes quackery. I don't believe we are justified in calling a man a quack simply because he doesn't follow the orthodox methods of modern medicine. If that were true, most of the advances that have been made in modern medicine would have been made by men who, technically, at least, would have had to be, at the time, called quacks. A quack, as I see it, and as I think most of the dictionaries and other reference works give it, is essentially a man who brags or boasts inordinately about what he can do. It doesn't mean that he is incompetent. Many quacks are quite competent. It doesn't mean that he has no license. Many, many quacks are, unfortunately, licensed. It doesn't mean that he is uneducated. A great many quacks in medicine today are graduates of some of the best medical schools in the country. But the man who brags inordinately about what he can do is a quack. And, unfortunately, there are plenty such.

I think we should get out of our minds the idea that the quack, in some way or other, hurts the economic status of the reputable physician. I don't believe he does. On the contrary, I think that from an economic point of view he helps us. Especially does he help us if we include in the term quackery—and I think we should—the exploitation of nostrums that are advertised so widely and by such blatant and boastful methods. I have said many times in talking to the public that if the patent medicine industry were destroyed over night, next to the patent medicine manufacturers themselves and the newspapers that share so largely in their profits, the next group that would be most seriously hurt, financially, would be the medical group. Every advertisement of a kidney pill—"every picture tells a story"—that convinces a hundred people who have a pain in the lower part of the back that they have kidney disease (which, of course, they probably haven't), will probably send as many people to the

family physician as it sends to the drug counter. The whole patent medicine industry is based on the theory of making hypochondriacs, and there is no question in the world but that tens of thousands of people go to the family physician every year because they have been frightened into believing that some passing indisposition they have is something serious, due to the vicious patent medicine advertisements they may have read in the daily newspapers. So don't get the idea that the quacks or the nostrum exploiters—and nostrum manufacturers are also quacks—hurt the income of the physician. They do not.

If a physician were only concerned with the dollars and cents aspect of the situation, he would say to the nostrum exploiter, "Go the limit. The more victims you get, the more patients I shall get." Our reason for opposing patent medicines and quacks is the same reason we have for eradicating typhoid fever and smallpox; because they are menaces to the public health. It is because it injures the public; it isn't because it injures us. It doesn't injure us. It means business for us.

Neither do I agree with Dr. Krasnow's suggestion that before patent medicines, or proprietary remedies (to give them the correct name), should be permitted to be sold, they should have the approval of the American Medical Association or even of the United States Public Health Service. In the first place, the American Medical Association is a scientific organization. It has no punitive powers and it wants none. I think it wholly repugnant to the American system of government to have too many *verboten* signs. Prohibitory laws are quite likely to bring in their wake greater evils than those they were created to do away with. I don't think it would be a good thing for the American Medical Association to have the power of determining what proprietary remedies the public might use. I think it would be a most dangerous power to put in the hands of the medical profession, and in the long run, it wouldn't work out in the interest of the public—and the public's interest is really the fundamental problem of this whole thing.

I believe that a great deal of the quackery we have is to be found in the cults, among the chiropractors, osteopaths, naprapaths and naturopaths, and I think we have been by no means blameless in our attitude towards laws governing the practice of medicine in the growth of these very things. We have in practically every state, definitive laws governing the practice of medicine. There are many who think that these laws have been passed in the interest of the medical profession. They haven't been. They were passed in the interest of the public. It wasn't to give doctors a monopoly of the healing art that they were passed. They were passed in order that the public might have, as it should have, among those who practice the healing arts, only such as are competent to practice such arts.

Now, because of the character of most of our medical practice acts, it was inevitable that when a cult, such as homeopathy, had become organized, the homeopaths should go to the legislatures and say, "Gentlemen, our particular school of medicine has reached the point where we believe we should be permitted to protect the public against incompetent homeopaths, and we want a law similar to the law that the regular physicians have, that will require homeopaths to have so many years of schooling, and then pass an examination by the homeopathic board." The laymen in the legislatures thought the idea reasonable and passed such laws, and we had a homeopathic board. When the eclectics came along, they did the same thing; and the osteopaths had the same story, and the chiropractors the same, and no one knows where it is going to stop.

Now, all of the latter day cults—osteopathy, chiropractic, naprapathy, naturopathy—are simply back doors to the practice of medicine. Every physician who has practiced any length of time knows that. Those fellows go to school for six months or a year or two, or don't go to school at all but get a diploma on the correspondence plan, and take examination in such states as license these various cults. And the first thing you know, they are pre-empting the functions of physicians and there is no stop to it. They should never have been given the power to treat human ailments, and they never would have been given such power if the law required all persons who wish to practice the healing art to have a knowledge of the fundamental sciences on which all healing arts are based.

There is also, it is true, quackery in regular medicine. There is no doubt about that. But there is an infinitely greater proportion of quackery among the cultists than there is among those who may legally call themselves doctors of medicine, M. D.'s. And for that reason I think a discussion of the cults is tied up with the problem of quackery.

In discussing these questions with the intelligent layman, you will find that he may say, "Well, doctor, don't you believe that osteopaths sometimes do some good?" The answer is, "Why, of course, they do." There is no question but what certain manipulations of the muscles may, in certain cases, do good. But the manipulations of the osteopaths are not osteopathy! It is hard to get the public to see that osteopathy is an alleged philosophy. It is just as preposterous to say that because the manipulations of an osteopath give a certain patient some relief, therefore, there is something in osteopathy, as it is to say that because mental therapy is a good thing, therefore, the incantations of the mumbo-jumbo of the African jungle may be.

The whole point of my talk is that I did wish that Dr. Krasnow could have kept closer in his definition of the term quackery. A quack, as I see it, is essentially a man who brags and boasts inordinately about his powers and not necessarily a man who is incompetent or uneducated or unlicensed. He may be competent, he may be licensed, and he may be pretty well educated, and yet, if he boasts and brags inordinately about what he can do, he is a quack. And that goes not only in medicine but in politics, religion and various other things.

Dr. Krasnow, in closing: My main purpose is to

deplore the laxity of our laws governing the practice of medicine. Indeed, whatever is good for the profession is good for the public and vice versa. As to my definition of quackery, I hope when I reach the point of having as much experience as Dr. Cramp I shall define it as he does, but I am very happy to have had Dr. Cramp discuss the paper and I hope we shall have the cooperation of the profession in carrying out the points which my work toward the solution of the problems of quackery has prompted me to establish in this paper.

CANCER OF THE UTERINE CERVIX*

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It is not my purpose in this paper to deal with a detailed technical discussion of methods of application of radium and x-ray in the treatment of cancer but rather to trace the development of radiation therapy—this includes both radium and x-ray—as I have observed this development in the various European centers during the past ten years; to compare the several different theories of practice of radiation therapy and to draw certain conclusions (for myself at least) following these observations, and after having applied the several different plans of procedure in my own practice and on my own patients, in over two thousand cases representing carcinoma of practically every sort in the various body locations, and after an observation of various plans of radiation treatment in over two hundred cases of carcinoma of uterine cervix.

In order to avoid confusion and to center the discussion on some definite point, I have selected carcinoma of the uterine cervix because in this disease radiation therapy has most clearly demonstrated its value. In this disease there is no longer any need of discussing the relative merits of radiation and surgery. The surgeons of standing throughout the country, those of experience and reputation, are all agreed that the results achieved by radiation have taken this disease out of the surgical domain. It is also a condition, because of the location of the uterus, that stands midway between superficial and deep cancer. The uterus is not a vital organ, it is centrally placed, it is accessible, and the methods of superficial and deep radiation therapy may be applied. Perhaps from a study of methods used and the results achieved in this type of cancer general conclusions can be drawn that are applicable to other types of cancer in other locations. If not, the study of uterine cancer itself is of extreme importance, because of its frequency and the seriousness of its character.

For the purpose of discussion I have selected three European centers, Stockholm in Sweden, Munich in Germany, and Paris in France, because they represent three schools of thought, because they have worked more or less independently and because, due to police registration in all of these countries, every citizen is registered, his change of domicile is recorded, and he can be traced. In other words cases treated can be kept track of for long periods of time, and as you know the ultimate results of treatment in carcinoma cannot be determined until after a five-year period has elapsed. Treated cases in America can be traced but only with extreme difficulty. This makes the statistical reports from European countries more exact and more convincing.

However, I do not wish you to get the impression that the work in Stockholm, Munich, or Paris is superior to that done in the other parts of the world especially the work done by certain American investigators, but because facilities at hand and the conditions under which they work make it possible for these European investigators to provide statistical reports more accurate and more convincing in character. I have followed the work of these various European centers, applied their methods in the treatment of my own cases, and even though it is not possible for me to present statistics of my own, due to the character of my patients and the difficulty in tracing them, I arrived a certain conclusions, for myself at least, that are of value to me, and it is the purpose of this paper to present these observations and conclusions for what they are worth, feeling that they may be of some value to you in arriving at your own conclusions, and mapping out your own plan of treatment in this serious disease.

I realize that it is extremely difficult in determining the values of various forms of treatment in carcinoma because of the necessity of

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waiting for five years before arriving at conclusions concerning the different forms of treatment, and that it is also extremely difficult to compare statistics from various clinics because the cases are not always classified on the same basis, a Stage 1 case or a Stage 2 case in one clinic may be entirely different from that in another clinic. The relative proportion of far-advanced to early cases in one locality may be considerably different from that in another, depending upon economic and social conditions.

Not more than ten years ago, however, it was not uncommon for cases of cervical carcinoma to be treated with fifty milligrams of radium for twenty hours in a capsule of one m. m. of brass and the results considered to be quite satisfactory. In contrast to this certain other clinics were advising an enormous dosage of radium for a short length of time—one or two hours, and yet again other therapists were depending upon the use of x-ray alone.

With the elapse of time and the accumulation of statistics, better methods of treatment of proven value have been evolved.

First let me describe the plan of treatment as it has been worked out by Dr. Heyman at the Radium Hemmett at Stockholm. The work there was started by Forssell in 1910, and in the beginning fifteen to twenty milligrams of radium filtered by five-tenths to one and a half millimeters of silver were used. The treatments were repeated every three to six weeks up to ten times. These frequent treatments with small doses and weak filtration often caused sloughing not only of the cancer itself but of the surrounding tissues with frequent formation of recto-vaginal fistulas. Temporary improvement only was achieved. Heavier filtration was then used and a less frequent number of applications with larger doses and more satisfactory healing was achieved.

By 1914 they had established a technic which has been followed out almost without change ever since. This consists of three treatments, using one hundred to one hundred and twenty milligrams of radium, with a filtration of three millimeters of lead with an interval of one week between the first two applications and an interval of three weeks between the last two with a total irradiation of sixty hours—that is six thousand milligram hours. Three millimeters of lead filtration is approximately the equivalent of one and one-half millimeters of platinum. In the three treatments approximately twenty-two hundred to twenty-six hundred milligram hours is given in the uterine canal and forty-five hundred milligram hours in the vagina.

In their opinion the vaginal application is just as important or more important than the intrauterine application and the important thing is to cover the whole surface of the growth with radium at each application. In the intrauterine application the whole uterine fundus must be filled with radium applicators.

They have little confidence in supplementive deep x-ray therapy applied from the outside and depend almost exclusively on the intrauterine and intravaginal applications. It is interesting to note, however, that during the past two or three years they are paying more attention to the external application of penetrating x-rays. Heyman is able to report on seven hundred and thirty cases that have been treated for more than five years and have found on the total number of cases, 23.1 per cent cured after a five-year period. Of this group, one hundred and eight were what he considered in the operable class and at the end of five years 43.6 per cent of these were well.

There are, of course, differences of opinion and different plans of treatment in the various German Clinics, but Munich I believe, is fairly representative of German thought and practice. In Germany, because of the expense of radium or radioactive substances deep x-ray has been developed considerably beyond that found in other countries. However, I believe that it is safe for me to say that the German investigators have been convinced after a number of years of observation that x-rays delivered to the pelvis from the outside, no matter how penetrating, are alone insufficient in the treatment of uterine carcinoma; that intrauterine and intravaginal application of radium in addition to the external radiation is necessary for the production of consistent results. They use fifty-five milligrams of radium or mesothorium filtered by one m. m. brass in the uterine canal for twenty-four to thirty hours, making a total of fifteen hundred milligram hours which they consider a maximum dose. Please recall that the radium application

as practicsed at Stockholm consists of twenty-two to twenty-six hundred milligram hours in the uterine canal and forty-five hundred milligram hours applied in the vagina, filter of three m. m. lead, or the approximate of one and one-half m.m. of platinum. In Germany they depend chiefly upon the external roentgenotherapy.

In two hundred and twenty-seven operable cases treated by radiation (a combination of a comparatively small amount of intrauterine and intravaginal radium with extremely efficient external roentgenotherapy), 40.5 per cent were cured. Forty-four of these cases did not complete the treatment, leaving one hundred and sixty-three, and the survival rate on the basis of five years in this group was 50.2 per cent; certainly a most satisfactory showing.

Of three hundred and ten Stage 2 cases, 22.3 per cent were cured. With the deduction of fifty cases that did not complete the treatment, the survival rate in this group is increased to 28.3 per cent. In a group of five hundred and forty-three Stage 3 cases (that is inoperable) where radium alone was used, 8.9 per cent were cured; where radium was combined with x-ray, 13.2 per cent were cured—quite a remarkable difference. In the inoperable cases the x-rays applied from the outside are of greatest value. This is quite in accord with the pathology of the condition present and treated. If the lesion is small and localized it can be successfully coped with by the radium alone but the radium rays are not effective far out from the active source. In these cases in which there is an involvement of the broad ligaments, glands, etc. x-rays applied from the outside have their greatest value.

In an analysis of all the cases at Munich, that is 1,216, two hundred and twenty-two, or 18.2 per cent were cured. However, in those cases where radioactive substance alone was used, 14.0 per cent only were cured, while in the cases where the combined treatment was given, that is radium together with the external application of penetrating x-rays, 21.4 per cent were cured. However, in analyzing the results it is well to remember that the radium therapy at Munich according to our present ideas, would be considered decidedly inadequate.

The work at the Curie Foundation, Paris, did not really get under way until a considerably later period than that in Sweden and Germany. In fact not until the spring of 1919, and did not become well established until two years later. However, the French were in a position to take advantage of the previous efforts made elsewhere, and have the advantage of a very close association with the Radium Institute under Madame Curie. They also have the advantage of having a relatively large supply of radium available for clinical and experimental work. However, it is quite interesting to note that in spite of the fact that they have such a large quantity of radium, that the essential plan of treatment at the Curie Foundation of Paris consists of small doses of radium, heavy filtration and a prolonged period of time of application. They abandoned the plan that is still in use in certain centers in this country of extremely large quantities of radium for extremely short periods of time, that is an hour or so. From my observations at least, the small dose of radium with heavy filtration for the prolonged period of time produces infinitely better results than the large dose of radium or emanation for a short period of time, even though the milligram hour dosage is practically the same.

In Paris they feel that the general condition of the patient is of more importance than the extent of the lesion—it is a question of whether or not the patient can stand the heavy and prolonged dosage.

The technic employed at the Radium Institute of Paris is not as yet fixed in the way it has become fixed and established at Stockholm. Dr. Heyman at Stockholm feels that until something better is offered than their plan of treatment they will continue to use their present methods.

In Paris they feel that a certain amount of experimentation is not only justified but necessary, and of course in dealing with a condition such as uterine carcinoma where the ultimate decision is based upon five year statistics, statistics must necessarily lag about five years behind theories of treatment.

While the technic at Paris has been modified several times since 1919 it remains substantially the same, but each of the changes has been guided by definite experimental, histological and biological study. The essential condition of homo-

geneous radiation and the administration of a dose sufficiently strong to destroy all the cancer cells with the production of a minimum amount of injury to healthy tissues has remained throughout. The dose, that is in milligram hours has been increased considerably by increasing the number of centers of radiation, decreasing the individual content of each tube of radium and increasing the amount of filtration supplemented by unusually prolonged x-ray therapy. The filtration used in the intrauterine application of radium is one millimeter of platinum and one and one-half millimeters of platinum is used in the vagina. This corresponds quite closely to the three millimeters of lead filtration used at Stockholm. In the x-ray treatment, 200 K. V. is used, the filter is one to two millimeters of copper, and the skin focal distance is usually sixty to eighty centimeters over a field about twenty by twenty centimeters in size with a duration of from five to eight hours—considerably more than is customarily used in this country or even in Germany.

In the radium treatment approximately 33.3 mgs. of radium are used in the uterus in three capsules, and 33.3 mgs. of radium used in the vagina in three capsules, with a total dosage of almost eight thousand milligram hours, given in a period of elapsed time of approximately five days.

In France as in Germany, they feel very decidedly that the intravaginal application of radium is as important as the intrauterine, and that supplementary penetrating x-rays from the outside are absolutely essential, particularly in the cases beyond the first stage.

Perfectly-planned and perfectly executed irradiation from the inside with radium and with x-ray from the outside is absolutely essential to produce successful results. This has become axiomatic.

In many cases in Paris instead of using the external roentgentherapy, radium at a distance is used. In these cases they apply four grams of radium at ten centimeters distance from the skin with a filtration of one millimeter of platinum, using eight fields and the treatment is of eighty hours duration, approximately three hundred and twenty thousand milligram hours. Whether the radium pack at a distance is more effective than the deep x-ray therapy has not as yet been determined.

As far as statistical results are concerned, the best results are shown for the year 1923 and they all feel at Paris that the methods now applied are infinitely better at present than used at that time. This assumption I feel is certainly justified. In all eighty-five cases treated in 1923 they report thirty per cent. cures.

The statistical information presented in this paper has been taken from the report of the Cancer Commission, Radiological Sub Commission of the League of Nations published in 1929. The subject matter of the paper is the result of personal visits and observations to these clinics, and subsequent application of the various methods in a large enough group of cases, approximately two hundred, to warrant personal conclusions.

It is my opinion that the best and most representative radium therapy in carcinoma of the uterine cervix is represented by the work at Stockholm; by far the most satisfactory and best developed roentgentherapy has been developed in Germany; the most progressive application of both methods, that is the application of radium and application of x-rays, is represented by the work being done at the present time in France.

Conclusions—Radiation therapy for carcinoma of the uterine cervix calls for prolonged application, not hours but days, high filtration, multiple centers of application with multiple units of radium to thoroughly cover the lesion. Vaginal application is even more important than intrauterine. A small dose of radium, fifty grams, applied in the uterine canal for twenty hours—one thousand milligram hours—is useless. For thorough application of the radium to cover the lesion flexible radium applicators are necessary. So-called combined applicators are inefficient.

Early diagnosis and early treatment are essential; because of the dangers of heavy dosage over long periods of time, special training in the application of radium and x-rays in the treatment of carcinoma of the cervix is absolutely essential.

DISCUSSION

Dr. Harold Swanberg, (Quincy): Dr. Pettit has given us a very fine résumé of radiation methods as used in the leading European clinics and we should be very grateful to him for the presentation. It seems,

however, there is a great deal of missionary work to be accomplished in this country to convince many surgeons in regard to the efficacy of radiation therapy in uterine cervical cancer.

I think one of the most effective means we can use in convincing the general profession, as to the value of radiation methods, is to continually quote statements from the leading surgical centers. For example: we all know that Rochester is not essentially a radiation clinic. It is a great surgical clinic, yet their statistics show, year after year, that they seldom revert to surgery in the treatment of cancer of the cervix. Just a few weeks ago, the 1930 report of gynecologic surgery of the Mayo Clinic was published. This report disclosed, that during this period 261 cases of cancer of the cervix were treated and only 8 operations were performed. It stated further that for several years they have not operated upon more than 8 such patients in any one year. This means that surgery, as a method of treatment for cancer of the cervix, has virtually been abandoned by America's largest surgical clinic.

One of the largest clinics in Germany is the University of Munich. Since 1913 not a single case of cancer of the cervix has been operated upon there, the entire brunt of the treatment being borne by x-ray and radium therapy. From 1913 to 1928, 2,203 patients suffering from cervical cancer were treated by radiation methods.

A few weeks ago there appeared in Nelson's Loose-Leaf Surgery the latest report from the Regaud clinic at the University of Paris. This report, based upon five-year studies of carcinoma of the cervix treated by radiation methods, shows that of the entire 1924 group (the last one upon which five-year studies were available), thirty-five per cent. were alive and free from cancer. The statement is also made in this report that they believe future five-year studies will probably show a forty per cent. salvage. It should also be borne in mind that while compiling these studies at the Regaud Clinic, all cases lost track of, or dying from other diseases during the interval, were classified as radiation failures.

I agree with Doctor Pettit's conclusion in regard to the necessity of heavy filtration and treatment over comparatively long periods of time, as yielding the best result in the management of this disease. We, too, reached this conclusion after several years' experience with different technics, and I am sure that our results today are better than ever before. Furthermore, since the adoption of the heavy filtration technic we have not been troubled with any fistula formations.

In closing, I wish to emphasize the importance of high voltage x-ray therapy in addition to radium, in advanced cases. When treating carcinoma of the cervix, if we cannot get our radium applicators within two centimeters of the growth, we cannot hope to control the lesion with radium alone. When administering x-ray radiation, we favor its preceding the utero-vaginal application of heavily filtered radium from multiple centers.

PARALYTIC ILEUS AND TETANY OF TOXIC ORIGIN FOLLOWING APPENDECTOMY

A CASE REPORT

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CHICAGO

A latent tonsillitis, which developed into a "septic sore throat" after an ordinary appendectomy, was the cause of a paralytic ileus and ensuing tetany in the case to be reported. Because of the fact, that the variety of symptoms bore so many similarities to manifold complications, and so many possibilities to diagnostic and therapeutic errors were given, a summarizing description of the case appears to be justified.

On March 12, 1931, W. S., 26 years old, German, complaining of constant pain in the right lower quadrant of the abdomen presented the following findings by physical examination:

Appearance: White, male, 6' 1", of pale yellow color of the skin, face shows very pronounced features with deep drawn out lines (facies abdominalis), chest and muscular layers very poorly developed, posture, somewhat bent forward.

Impression of sickly, unambitious person.

Head, neck: Essentially negative except for slight enlargement of tonsils, which do not appear to be reddened nor acutely ulcerated.

Chest: Lungs: Essentially negative.

Heart: Reveals a slight mitral murmur.

Abdomen: Musculature feels somewhat rigid, especially over McBurney's point. Great tenderness and subjective pain noted on slightest pressure.

Extremities: Negative.

A diagnosis of chronic recurrent appendicitis was made, and the patient advised to have appendix removed. The operation was performed the following day at the Edgewater Hospital of Chicago.

The laboratory findings before operation did not reveal any particular abnormalities:

Blood: Hb. 90%, white cell count 12,800; polymorphs 70%, eosinophils 2%; small lymphocytes 10%, large 8%.

Urinalysis: Specific gravity 1,020, color yellow; transparency cloudy, reaction alkaline, albumin and glucose negative.

Microscopic examination of urine: Amorphous crystals and yeast cells.

The operation was performed under ethylene-ether narcosis in the usual manner: The appendix was amputated, and large circular adhesions around the cecum were divided between ligatures, the abdominal wall closed in anatomical layers. The removed appendix

was slightly hardened and covered with fibrous connective tissue.

Postoperative course:

Day of operation: Administration of 1000 c. c. of Ringer's solution every six hours by hypodermoclysis and calcium gluconate (Sandoz) 10 c. c. intravenously. The abdomen feels soft, and the patient is able to pass urine freely; does not complain of any discomfort. Temperature 98.6.

First postoperative day: Temperature increased to 101.6, pulse 108, respiration 22. Immediate inspection of wound does not disclose any discoloration nor apparent changes. The abdomen itself is flat. Patient is able to pass flatus. Throat examination: Tonsils swollen without any purulent changes, pharnyx greatly reddened. Patient is urged to gargle frequently. Intravenous injections of saline solution 500 c. c. given at six hourly intervals. Evening temperature rises to 102.6, pulse 134, respiration 24.

Second postoperative day: Temperature remains high, 102, pulse 130, respiration 24, abdomen is slightly distended, which distention disappears promptly after insertion of colon tube. Patient is able to pass flatus and some fecal matter. Calcium gluconate 10 c. c. administered intravenously. Temperature decreases to 100, pulse remains high—140, respiration 24. Digifoline (one ampule) given hypodermically and aspirin compound by mouth. Patient feels somewhat better towards evening.

Third postoperative day: Temperature 102. Abdomen is very largely distended. Pituitrin and digifoline administered hypodermically. The wound inspection shows some purulent discharge from the incision. The infection of the incision appears to be restricted to the external layers. Sutures are immediately removed and gauze drains, dipped in Antivirus (Besredka), and iodoform gauze inserted into the wound. Hot applications over incision. During following hour patient vomits greenish mucus and is very restless. Repeated lavages of the stomach result in temporary cessation of vomiting. Pulse very rapid, above 140. 500 c. c. of saline with contents of one ampule of digifoline given intravenously. At the same time caffein and camphor injected hypodermically. The abdomen continues to distend, and the patient grows more and more restless. Peristalsis over the abdomen can neither be heard nor felt. In spite of all procedures temperature climbs up to 104.2, and continues rising. Calcium chloride and calcium lactate administered intravenously as soon as patient shows signs of tetany characterized by trismus and clonic convulsions of the hands (main en griffe). The pulse is imperceptible; adrenalin and ephedrine fail to improve the pulse quality; oxygen with 9 percent. carbon dioxide inhalation intensifies the difficulties in breathing. Finally the patient expires in the early afternoon.

Post mortem examination (abdominal cavity permitted only):

Body of an adult white male, 26 years of age, 182 cm. in length. Rigor mortis not present except for slight rigidity of jaw.

Abdomen: Swollen, drum like distended, presents an incision (right rectus) of 9 cm. in length in the right lower quadrant of the abdomen, into which a goose egg sized part of the large bowel protrudes. The protruded cecum is bloody suggillated; to both sides there are iodoform gauze drains to be seen, which are inserted into the wound. Skin and superficial fascia are covered with pseudomembranous purulent effusions of greenish color.

Situs abdominis: A moderate amount of fibrinous purulent shreds cover the ileum and mesentery. The appendix has been removed. Sutures intact. Very slight inflammatory manifestations seen at the ileocecal valve. The jejunum shows besides pseudomembranous purulent effusions marked hemorrhages beneath the serosa. The upper part of the descending colon is largely inflated. The middle part of the descending colon is completely strictured in an extension of 10 cm. Below this strictured area the sigmoid and rectum appear inflated.

Intestines: The small intestines, especially the duodenum, show distention and on inner surface very large congestions and infarctions. The heights of the villi are of almost purple color; duodenum and jejunum, also lower parts of ileum show hemorrhagic infarction. The ileo-cecal valve does not show any changes except a slight distention; the inverted stump of the appendix is slightly reddened. On opening the lower parts of the small intestines some liquid feces and discolored blood are evacuated.

The formerly mentioned constricted part of the descending colon shows on inner surface several from pin point to pea sized hemorrhages. A white line of demarkation signifies the contracted area.

Stomach: Shows two contractions at the middle part of the larger curvature. The contents consist of a bloody, greenish fluid of foul odor. The mucosa presents many hemorrhagic extravasations.

Mesentery: The blood vessels of the mesentery are somewhat engorged but do not show any thrombus formations.

Spleen: Soft, covered with a moderate amount of fibrin. On cut section the pulp is somewhat softened, and the follicles are prominent.

Liver: Appears restricted above the costal margin (about two finger breadths). On cut section the lobuli are not very distinct. A few light brown areas are to be observed (Anemic areas).

Kidneys: Are freely movable within their fatty capsules. The fibrous capsules strip easily. The cortices show a few congenital lobulations. A slight visibility of stellate veins characterizes presence of hyperemia. The kidney pelves are dislocated to the upper medial regions. On cut section the cortices and medullae are not very distinct.

Gallbladder: Appears largely distended. The common duct is very large. The portal vein empties some foamy bloody fluid.

Pathological diagnosis: Paralytic ileus of descending colon. Pseudomembranous fibrinous generalized

peritonitis. Phlegmonous infiltration of skin, fascia and muscle around incision.

Bacteriological diagnosis: Streptococcus hemolyticus.

COMMENT: The case is very interesting from many angles. The rapidity with which the infection spread, the apparent unusefulness of all postoperative measures to prevent ileus, and the speedy progress of the ileus itself with final tetany represent quite unusual sequelae to a so-called "normal appendectomy."

Symptomatology: The prodromal symptoms of a fast developing ileus did not appear as to pain and vomiting. The patient never complained of any severe pain, but of a more or less insignificant, uncomfortable feeling, which is complained of by almost any surgical patient. The location of a "dull feeling" in the abdomen was given in the lower part rather than in the upper, quite different from the usual complaint in acute blockage. The so-called initial vomiting was absent. Vomitus appeared shortly before the end, more as a reflectory reaction of the celiac plexus. Of the cardinal symptoms of ileus only two were present (during the last two hours): Apathy and difficulties in breathing.

Etiology: A toxemia originated by streptococcus hemolyticus was the cause.

Histological aspect: The appendix itself revealed the typical picture of a chronic recurrent appendicitis. Incidentally, sections of the distal end showed vast hyperchromatic, perivascular lymphatic and polymorph collections, so that one may interpret those as a superimposing bacterial invasion.

The sections through the intestinal wall after post mortem examination were subjected to an oxydase reaction to show the great amount of polynuclear leucocytes in the muscular layers. The oxydase reaction having properties to show leucocytic accumulations better than the ordinary H. E. staining was used to observe the dispersion of leucocytes throughout the intestinal wall. In fact a very large number of leucocytes was found in the muscular layers, and consequently one might deduct that a direct emigration of streptococci took place through the stigmata of the intestinal wall.

Bacteriological aspect: The very virulent strain of streptococcus hemolyticus (cultures taken from the tonsils and post mortem specimens) must have been dormant in the chronically enlarged tonsils. The patient having been in a somewhat weakened condition, probably was about to develop a "septic sore throat," and the subjection to an inhalation anesthesia possibly stimulated the septic process. During the narcosis the stagnation of saliva and regurgitated stomach contents formed an ideal culture medium for bacterial growth. The dissemination of the infection was evidenced by the increase in temperature and pulse rate, facts which prohibited the early diagnosis of an approaching ileus.

As to the classification and virulence of the streptococcic strain, the cultures of the throat as well as the ones taken from the peritoneum grew pure streptococcus hemolyticus.

According to Buerger and Much the phagocytosis of less virulent types of streptococcus is by far greater than of a highly virulent one. Our conclusion of direct diffusion of the streptococci through the intestinal wall stands absolutely in conformity with the histological findings in the oxydase reaction. (Leucocytes unable to check the emigation of streptococci.)

The toxin of this very virulent streptococcus acted upon the body similarly to a calcium binding chemical. The pathological changes were almost identical to those observed in oxalic acid poisonings as recently described by Hennemeyer.

The odd disturbances of metabolism and nervous system created by the toxemia will be discussed in the following part.

Physiological aspect: Immediately upon diagnosis of calcium deficiency manifested by tetanic convulsions the previously routinely administered amount of calcium was largely increased. The tetany followed the first profuse vomiting, thus the first symptom of disturbed acid base equilibrium was recognized.

The recent experimental work on calcium metabolism of various authors could be summarized in two important statements concerning the origin of intestinal tetany:

1. In partial obstruction of the intestinal tract the congested areas produce great quantities of calcium, which cannot be absorbed properly, therefore leading to a formation of an insoluble calcium soap.

2. The excessive loss of blood chlorides brings about an increase in calcium antagonists with

ensuing disturbance of the acid-base equilibrium.

Both conclusions confirm the findings of the reported case: The excessive production of calcium led to a stasis of insoluble calcium in the upper intestines and unbalanced at the same time the blood and tissue constituents so severely, that the calcium antagonists prevailed such as: carbon dioxide combining power of plasma, potassium and urea nitrogen. Furthermore, the calcium antagonistic chemism caused a stimulation of the sympathetic nervous system, which ended in an adynamic ileus. A vicious circle was created by all these changes, thereby leaving no way of correct conclusion whether the decrease of blood chlorides, then the adynamic ileus by stimulation of the sympathetic nervous system and following calcium deficiency took place in this order or vice versa.

Apparently the carbon dioxide produced by the intestinal stagnation was increased by the therapeutic inhalative administration of oxygen with 9 per cent. carbon dioxide to relieve difficulties in breathing. The tetanic convulsions became more severe under this treatment. This way the opposite result was obtained against expectations.

Further *pathological-physiological findings* might be of interest: The post mortem examination revealed bloody infarctions of the mucosa of stomach and duodenum. These observations sustain *Mueller's* theory that adynamic ileus results in a diminution of peristalsis and hypersecretion of the upper intestines and stomach; a relaxation of the pylorus then leads to regurgitation of gastric contents. The hemorrhages of the heights of the villi in our case confirm *Mueller's* statement and also explain the hypersecretion of calcium of the higher intestinal tract, causing the rapid calcium deficiency in the blood stream.

Therapeutic considerations: The sad experiences of the described case urge certain postulates concerning surgical proficiency in preventing incidents of adynamic ileus following kryptogenic infections. It must be emphasized that there prevails a great fallacy in judgment of surgical risk by mere routine laboratory procedures before operation. Blood-chemistry, especially determination of blood-plasma-chlorides and calcium contents would have given more information concerning the stability of the patient. The blood picture alone is not invariably the safest leader for consideration of surgical risks.

Hypertonic sodium chloride solutions were not given, for the simple reason that naturally the ordinary postoperative measures were refuged to. It might be of value to inject routinely hypertonic salt solutions with 25 per cent glucose after operations, since a loss of blood chlorides is to be expected in any surgical procedure.

It will remain an unsolved question whether a spinal or rectal anesthesia would have prevented the fatal outcome of the case.

Summary: A case of adynamic ileus combined with tetany following appendectomy was described with all postoperative incidents, and epicritical considerations were discussed.

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USE OF MECHANICAL MEASURES IN TREATMENT OF OBSTINATE EDEMA

In eight cases of extensive edema, mostly the result of congestive heart failure and resistant to medical therapeutic measures, Edward F. Bland and Paul D. White, Boston (*Journal A. M. A.*, Nov. 15, 1930), have employed Southey's tubes inserted into the edematous subcutaneous tissue of the legs or scrotum. In two of the patients the results were strikingly beneficial, following the removal of 16 liters in the course of two days in one case, and 9 liters in three and one-half days in another. In three patients there was moderate relief; in one case only slight improvement was noted; the remaining two patients were not relieved. In suitable cases the use of Southey's tubes is a valuable therapeutic procedure, and the authors believe that the employment of this method as recommended many years ago by Reginald Southey should be revived.

RENAL GLYCOSURIA AND PENTOSURIA.—

Harold W. Jones and Walter Sussman (*American Journal of the Medical Sciences,* 173:513, April, 1927).

Renal glycosuria and essential pentosuria, clinically present similar features. Pentose and dextrose cannot be differentiated by the use of the usual reduction tests. Bial's test is useful, but not always accurate in the differentiation.

The differential diagnosis between renal glycosuria and diametes mellitus is made by the blood sugar estimation; by the blood sugar tolerance test, and by the estimation of the respiratory quotient after carbohydrate ingestion. The authors emphasize the necessity of a more careful differentiation.

Renal diabetes might be included in the group of conditions designated as "inborn errors of metabolism," pentosuria, cystinuria, alkaptonuria and hematoporphyria congenita.

THE THYROID GLAND AND AVIATION

A malfunctioning thyroid gland should be considered a disqualifying factor in the examination of aviation candidates.

Old pilots who show symptoms of malfunction of the thyroid should not be allowed to participate in pursuit or attack maneuvers nor in prolonged cross-country flights. There is likely to be ocular imbalance and a tendency to nervous exhaustion.—MAJ. A. M. BRAILSFORD, M.C., U. S. A., in *Military Surgeon,* August, 1929.

THE WASSERMANN REACTION

A fixed positive blood Wassermann reaction, persisting in spite of regular and active treatment, means continued activity of the syphilitic disease in the patient presenting this reaction.

Cases having a titration of 32 or higher may be assumed to be Wassermann-fast; that is, the reaction either returns to its former strength as soon as treatment is discontinued or it cannot be changed to a negative by any treatment that the patient can or will endure.—LT. COL. E. B. VEDDER, M.C., U. S. A., in *Military Surgeon,* August, 1929.

SOME NEWER REMEDIES IN TREATMENT OF PERNICIOUS ANEMIA

Raphael Isaacs and Cyrus C. Sturgis, Ann Arbor, Mich. (*Journal A. M. A.,* Aug. 23, 1930), assert that dried, defatted hog stomach may be used as a therapeutic agent in inducing and maintaining a remission in patients with pernicious anemia. A remission may be induced with dried material (15 Gm.) corresponding to 100 Gm. of fresh stomach, and the remission may be maintained with 7 Gm. of this material. However, a safe clinical dosage is 10 Gm. for each million red blood cell deficit in the red blood cell count. The maintenance dose is 10 Gm. from five to seven times a week. So far no gross differences have been noted in the clinical features of the liver-induced remission and that after stomach therapy.

APHORISMS FOR DOCTORS

Physicians may often use selected aphorisms in their writings in order to enhance the appearance of erudition on part of the authors, and to afford breathing spells on part of the readers. During the past year or two the New York State Journal of Medicine has used nearly every one of the following aphorisms compiled by Glenn Compton, and printed in the New York Herald Tribune of May first, and will probably use them over again next year:

"The rolling stone collects no moss;
Gambling throws you for a loss;
Nor borrower nor lender be;
A stitch in time saves two or three,
Or six or eight or maybe nine;
In bottles old put no new wine;
Play not with fire, for it will burn;
The road is long that does not turn;
Handsome is as handsome does;
There's nothing new, there never was;
Cross no bridges in advance;
The highest bliss is ignorance;
Put something by for rainy days;
Let not thy head be turned by praise;
The child is father to the man;
It can be done, you know it can;
Burn not the candle at both ends;
For all your sins make full amends;
Spare the rod and spoil the child;
Be not by siren's lures beguiled;
Great oaks from little acorns grow;
Man wants but little here below;
A barking canine never bites;
A brave man down gets up and fights;
The dead goose lays no golden egg;
A hole that's round fits no square peg;
As you sow so shall you reap;
Always look before you leap;
A friend in need's a friend indeed;
Of the morrow take no heed;
'Tis an ill wind blows no good;
Great men are misunderstood;
Rome was built not in a day;
While the sun shines make thee hay;
Enchantment is by distance lent;
Rich men seldom are content;
To thy proper self be true;
Credit give where it is due;
For no man wait the tide and time,
And here's the reason for my rhyme:
A little nonsense now and then
Is relished by the best of men."

SPECIMEN CONTAINERS

The close-covered, impervious paper boxes of various sizes, used for packing ice cream in the retail trade, make very satisfactory containers for sputum, feces and other similar specimens submitted for laboratory examination. They cost less than one cent each and can be burned after being used once.

THE TEN COMMANDMENTS OF CANCER*

1. Do not cut across a cancer and leave part behind. The part remaining will grow more rapidly than if you had left it alone, altogether.

2. An operation for cancer is an operation to save life. Cosmetic results are to be considered, but they are not to be weighed against recurrence and death a few years later.

3. Never manipulate a cancer roughly either before or during operation or more often than is necessary to make a diagnosis. To do so is the easiest way to drive cells into the lymph or blood current—hence metastasis.

4. Do not let a woman drag you into her delusion that her early cancer symptoms are due to the menopause. The menopause is a normal physiological state, and if the woman's organs are healthy she will be healthy.

5. Repair every cervix that is eroded, everted or the seat of a discharge.

6. Do not rule out cancer because the patient is not old. About 10 per cent of cancers occur before thirty-eight.

7. Do not tell your patients they have cancer if you are sure they will follow your advice at once. If they are inclined to delay, tell them frankly what they have and what will be the consequence of delay. If they make their own choice, let it be done with full knowledge of facts and prospects. Tell the relatives or friends in any event.

8. To save your patients from cancer save them from delay. Do not wait for pain and cachexia—the signs of impending death.

9. Do not admit that incurable cancer is unrelievable cancer. Ligation, cautery, palliative removal, electrocoagulation, irradiation, and other proven physical methods may change distress to comfort and add months or years. The patient who appeals to you for relief is the one to be considered—not reputation or "the effect on the community."

10. Be always on the watch for early suspicious symptoms. Be prompt to follow them to a definite diagnosis. Be courageous enough to insist on immediate proper treatment.

*From the Weekly Roster and Medical Digest (Philadelphia County Medical Society), June 29, 1929.

Marriages

DOUGLAS BOYD, Evanston, Ill., to Miss Marian Winthrop Taylor of Chicago, June 6.

EVA J. LINE, Niles Center, Ill., to Mr. Ardel Frownfelter of Chicago, in Diller, Neb., June 10.

HARRY M. LEVY to Miss Shirley Scharf, both of Chicago, June 14.

BEN Z. RAPPAPORT to Miss Sally Goldberg, both of Chicago, June 28.

HAROLD C. VORIS, Chicago, to Miss Ila Thelma Knight of Evanston, Ill., in Salina, Kan., June 27.

LORENZ HENRY WESTENBERGER to Miss Theodora Isabel Warden, both of Chicago, June 9.

Personals

Dr. Joseph F. Bredeck, St. Louis, spoke on "Diagnosis of Tuberculosis" before the St. Clair County Medical Society, June 4.

Dr. Edwin M. Miller was elected president of the alumni association of Rush Medical College at its annual reunion, June 16, and Dr. Charles A. Parker, secretary.

Dr. Russell M. Wilder, chairman of the department of medicine at the University of Chicago since May, 1929, resigned July 1. He will continue as professor of medicine.

Dr. Samuel Kaplan, among others, spoke on "Blood Chemistry Study in Normal Pregnancy and Eclamptogenic Toxemia" before the Chicago Gynecological Society, June 19.

Dr. Irving S. Cutter, dean and professor of medicine, Northwestern University Medical School, received the honorary degree of doctor of laws from Jefferson Medical College, Philadelphia, at the recent commencement.

Dr. James A. Doull, professor of hygiene and public health, Western Reserve University School of Medicine, Cleveland, is visiting professor of bacteriology at the University of Chicago for the summer quarter.

Drs. Randolph O. Stites, Industry, and Frank P. Norbury, Jacksonville, among others, discussed undulant fever at the meeting of the McDonough County Medical Society, Macomb, June 9.

Dr. Harry A. Oberhelman, Chicago, spoke before the Peoria City Medical Society, June 16, on "Results of Personal Studies of 600 Breast Tumors." The society had its annual picnic, June 25, at Michell Farm Sanitarium.

Drs. Sumner L. Koch and Francis J. Gerty, Chicago, addressed the La Salle County Medical Society, Wedron, June 17, on "Infections of the Hand" and "Emotional Changes as Symptoms of Mental Disease," respectively.

Arthur Isaac Kendall, Dr.P.H., of the department of research bacteriology of Northwestern University Medical School, gave the James A. Patten lecture in bacteriology at the university,

July 22, "Observations upon the Filtrability of Bacteria, Including a Filtrable Organism Obtained from Cases of Influenza."

Dr. M. L. Folk has been appointed assistant professor of ophthalmology, University of Illinois, College of Medicine.

News Notes

—The McElwee Memorial Home for Destitute Crippled Children, on the University of Chicago Midway, was recently dedicated.

—Mrs. Elizabeth S. McElwee, who gave to the Home for Destitute Crippled Children funds for the new Nancy Adele McElwee building recently dedicated at the University of Chicago, has financed also the renovation of the old buildings of the home, which will now be used as an outpatient clinic. The university will provide professional care for the patients and will be free to use them for study.

—The Gertrude Dunn Hicks Memorial Hospital, the fourth unit for the care of sick children and the study of their diseases at the University of Chicago, was dedicated, June 22. The hospital, located near Billings Memorial hospital, has 50 beds, making the hospital facilities of the Midway medical center almost 600 beds. It was made possible by a gift of $300,000 from Mrs. Gertrude Dunn Hicks.

—Physicians of Logan County gave a dinner, June 4, in Lincoln, for three physicians who have spent fifty years or more in practice: Drs. William V. Guttery, who has practiced in Middletown since 1881; Charles Rembe, Lincoln, and William Edgar McClelland, Beason. A set of clinical thermometers and a leather case were given to each.

—A graduate course in ophthalmology is to be given by members of the faculties of the four medical schools in Chicago, beginning September 1, to run for a year. Lectures and clinics will be held at the four universities and ten hospitals on a rotating schedule. Didactic instruction will be given from 8 to 9:30 a. m. and from 5 to 6:30 p. m.; clinical instruction will be given between 10 a. m. and noon and between 2 and 4 p. m. The course is limited to twelve students. The fee is $1,000, of which $100 is to be paid on application. Further information may be obtained from Dr. Richard C. Gamble, secretary, 30 North Michigan Avenue, Chicago.

—Dr. Frederick Tice and Dr. Allan J. Hruby have recently been appointed to the Board of Directors of the Municipal Tuberculosis Sanitarium. Dr. Tice is President and Dr. Hruby is Secretary.

—The Consulting Staff of the Municipal Tuberculosis Sanitarium has been reorganized and the staff, as at present constituted, is as follows: Dr. Charles S. Bacon, Obstetrics; Dr. E. J. Berkheiser, Orthopedics; Dr. Carroll E. Cook, Roentgenology; Dr. Jerome R. Head, Surgery; Dr. John M. Krasa, Ophthalmology; Dr. Francis L. Lederer, Ear, Nose and Throat; Dr. Clement L. Martin, Proctology; Dr. Eugene T. McEnery, Pediatrics; Dr. Dorin F. Rudnick, Genitourinary; Dr. Frank Smithies, Gastroenterology; Dr. Clarence McMullen, Diabetes; Dr. Arthur W. Stillians, Dermatology; Dr. Henry B. Thomas, Orthopedics; Dr. Irving Treiger, Cardiologist.

Deaths

GIDEON LANNING BARBER, Chicago; Hering Medical College, Chicago, 1894; aged 87; died, June 14, of aortic stenosis and chronic nephritis.

HENRY WILLIAM FRED BARTELLS, Chicago; Rush Medical College, Chicago, 1885; aged 68; died, June 25, in St. Elizabeth's Hospital, of cerebral hemorrhage.

GEORGE WILLIAM BOOT, Evanston, Ill.; Sioux City College of Medicine, 1893; University of Pennsylvania School of Medicine, Philadelphia, 1898; member of the American Academy of Ophthalmology and Oto-Laryngology and the American College of Surgeons; formerly assistant professor of laryngology and otology, Rush Medical College, Chicago, and assistant professor of laryngology, University of Illinois College of Medicine; aged 61; on the staffs of the Children's Memorial Hospital, Durand Hospital, Cook County Hospital, Illinois Eye and Ear Infirmary, and the Grant Hospital, Chicago, and St. Francis' Hospital, Evanston, where he died, June 14, of septicemia and diabetes mellitus.

JOHN JOSEPH BOWES, Peoria, Ill.; Medical Department of Drake University, Des Moines, 1900; served during the World War; on the staff of the Peoria State Hospital; aged 54; died, May 9.

EARL J. BROWN, Chicago; Jenner Medical College, Chicago, 1903; member of the Illinois State Medical Society; aged 67; died, June 8, of chronic myocarditis and cholecystitis.

G. W. CAMPBELL, Flora, Ill.; University of Tennessee College of Medicine, Memphis, 1909; a member of Illinois State Medical Society, president of Xenia State Bank; president of school board; State Senator, 1912-

18; died at Olney Sanitarium, May 9, following an operation for gall stones.

JAMES EDWARD CAMPBELL, Peoria, Ill.; Northwestern University Medical School, 1908; member of Illinois State Medical Society; on staff of John C. Proctor Hospital; aged 59; died, June 30, at the home of his son, Dr. Orwood J. Campbell, in Minneapolis, of cerebral thrombosis.

HOWARD ROY CHISLETT, Chicago; Hahnemann Medical College and Hospital, Chicago, 1888; formerly clinical professor of surgery at his alma mater; member of the American College of Surgeons; on the staff of the Chicago Memorial Hospital; aged 69; died suddenly, June 13, of coronary thrombosis.

ALICE BUTLER CROY, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1898; aged 64; died, May 26, in the Chicago State Hospital, of cerebral arteriosclerosis.

FRANK OZRO ELLIOTT, Chicago; Harvey Medical College, Chicago, 1902; aged 60; died, June 6, in the Woodlawn Hospital, of uremia and carbon tetrachloride poisoning.

WALTER EUGENE FOSTER, Richmond, Ill.; University of Michigan Medical School, 1900; a member of Illinois State Medical Society; aged 55; died, June 1, after a long illness.

SAMUEL HANCOCK, West Frankfort, Ill.; Missouri College of Medicine and Science, St. Louis, 1903; a member of Illinois State Medical Society; aged 57; died, June 22, in Union Hospital, following operation for appendicitis.

HERMAN J. HENSLEY, Yates City, Ill.; Rush Medical College, Chicago, 1887; formerly mayor of Yates City; aged 67; died, May 25, in the Proctor Hospital, Peoria.

HENRY C. KERBER, Chicago; Rush Medical College, 1877; was one of the oldest members of the Chicago Medical Society. His early surgical career, cut short by an accident, was followed by many years of devotion to the practice of internal medicine and research, in which he established an enviable reputation. His death occurred July 19, at the age of 75, from gallstones and myocarditis.

MARION SHMULEQNA FINKEL KOGAN, Chicago; Odessa State Medical Institute, Odessa, Ukraine, Russia, 1922; aged 33; died, June 10, in the Mount Sinai Hospital of peritonitis following an episiotomy.

BAYLESS B. LANG, Roodhouse, Ill.; Eclectic Medical Institute, Cincinnati, 1873; aged 78; died, June 30, of chronic myocarditis, nephritis and arteriosclerosis.

ROSCOE LEWIS, Carbondale, Ill.; St. Louis College of Physicians and Surgeons, 1904; member of the Illinois State Medical Society; aged 48; died, May 27, of coronary thrombosis.

GEORGE ALBERT LIERLE, Barry, Ill.; Missouri Medical College, St. Louis, 1898; aged 54; died, June 24, of broncho-pneumonia and heart disease.

LUTHER MARTIN MARVEL, Weldon, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; past president of the Dewitt County Medical Society; aged 58; died, June 14, in the Warner Hospital, Clinton, of injuries received when the automobile in which he was driving was struck by a train.

ROBERT JACKSON MCCONNELL, Baylis, Ill.; Keokuk (Iowa) Medical College, 1891; member of the Illinois State Medical Society; aged 68; died, June 18, of a selg-inflicted bullet wound.

CHARLES W. MCPHERSON, Polo, Ill.; Rush Medical College, 1882; a member of Illinois State Medical Society; aged 60; died, June 30, of chronic myocarditis.

HARRY MEISSLER, Chicago; Northwestern University Medical School, Chicago, 1917; member of the Illinois State Medical Society; aged 41; died, June 7, in the Wesley Memorial Hospital, of pneumonia.

JOHN HENRY MILLER, Pana, Ill.; Missouri Medical College, St. Louis, 1880; a former president of the Illinois State Medical Society and of the Medical Society of Central Illinois; president of Pana Carnegie Schuyler library board; aged 76; died, May 5.

MAURICE SINCERE, Chicago; Bellevue Hospital Medical College, 1888; aged 65; died, July 15, of septicemia resulting from a carbuncle.

WILLIS STEARNS, Pomona, Ill.; Missouri College of Medicine and Science, St. Louis, 1891; a practitioner in Pomona for 40 years; aged 70; died, June 28, in Holden Hospital, of cerebral hemorrhage.

DANIEL A. K. STEELE, Sarasota, Fla.; Northwestern University Medical School, 1873; a practitioner of medicine and surgery for 50 years; one of the founders of the College of Physicians and Surgeons in Chicago, 1882; and largely instrumental in the affiliation of that school with the University of Illinois; president and dean of the faculty, professor of surgery for many years; one of the founders of the University Hospital and of the American College of Surgeons, and member of the board of governors; one of the founders of the Medico-Legal Society of Chicago; president of Chicago Medical Society in 1884; president of medical staff, Cook County Hospital, 1887-1890. Dr. Steele held numerous positions of trust and responsibility previous to his retirement 8 years ago and was honored with the degree of LL.D. by the University of Illinois in 1906. He died, July 19, in Sarasota, where he had resided since retirement, at the age of 79.

JOSEPH J. STERN, Chicago; Chicago College of Medicine and Surgery, 1916; aged 57; died, May 3, in the Michael Reese Hospital, of heart disease.

STANISLAUS VON MARTINITZ, Chicago (licensed, Iowa, 1886); aged 85; died, June 29, of myocarditis.

PLUMER MORTON WOODWORTH, Altadena, Calif.; Chicago Medical College, 1878; member of the Illinois State Medical Society; at one time president of the Lincoln Park Board, Chicago; formerly on the staffs of St. Joseph's Hospital and the U. S. Marine Hospital, Chicago; one of the organizers of the Augustana Hospital and the Morris Porter Hospital, later named the Children's Memorial Hospital; aged 80; died, July 6, of epithelioma.

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